Chemical Week

February 15, 1958

Price 35 cents

Last-quarter sag in profits clips '57 earnings, but won't trim '58 expansions . . p. 20

Chemstrand sets precedent for jointly owned companies, issues annual report . p. 31

Hairsprays for men—potential $30-million/yr. market. Companies ready products . p. 39

Measure your maintenance efficiency. CIL case-study provides yardstick . . . p. 51

Loading up for Latin America. New data prove good neighbors are good customers . p. 75

A McGRAW-HILL PU

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P P POWER

How to stay in love with a fender-bender!

NOW there's a better way to cope with dented fenders than blowing your top, junking that new car, or wondering if you married the right girl.

Thanks to a new automotive body "solder" using an Epon® resin, repairs can now be made more quickly than ever before—and at a fraction of the usual cost. Tough as the steel to which it clings and as easy to apply as putty, this Epon resin-based "solder" will take and hold any desired shape, mend dents and nicks, fill holes, seal metal to metal with an unbreakable grip.

Epon resins, used in a variety of applications in structural plastics, protective coatings, and adhesives, are another Shell Chemical contribution to industry.

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

NEW YORK

SHELL

vinyl sentinel

QUALITY is worth guarding. Quality materials – like the bright, clear sheeting for this handbag – sell for more. So guard the quality of your vinyls with Argus stabilizers and plasticizers. Argus products are the industry's standard.

Whatever your vinyl formulation problem, Argus can supply you with a stabilizer/plasticizer system to give just the qualities you need – in the mix or in the finished material. Tell us your problem. We'll send appropriate technical bulletins and samples.

Two new Argus stabilizers – Mark WS and Mark C – have just been developed for special calendering operations. Ask us about them.

ARGUS CHEMICAL CORPORATION / New York and Cleveland

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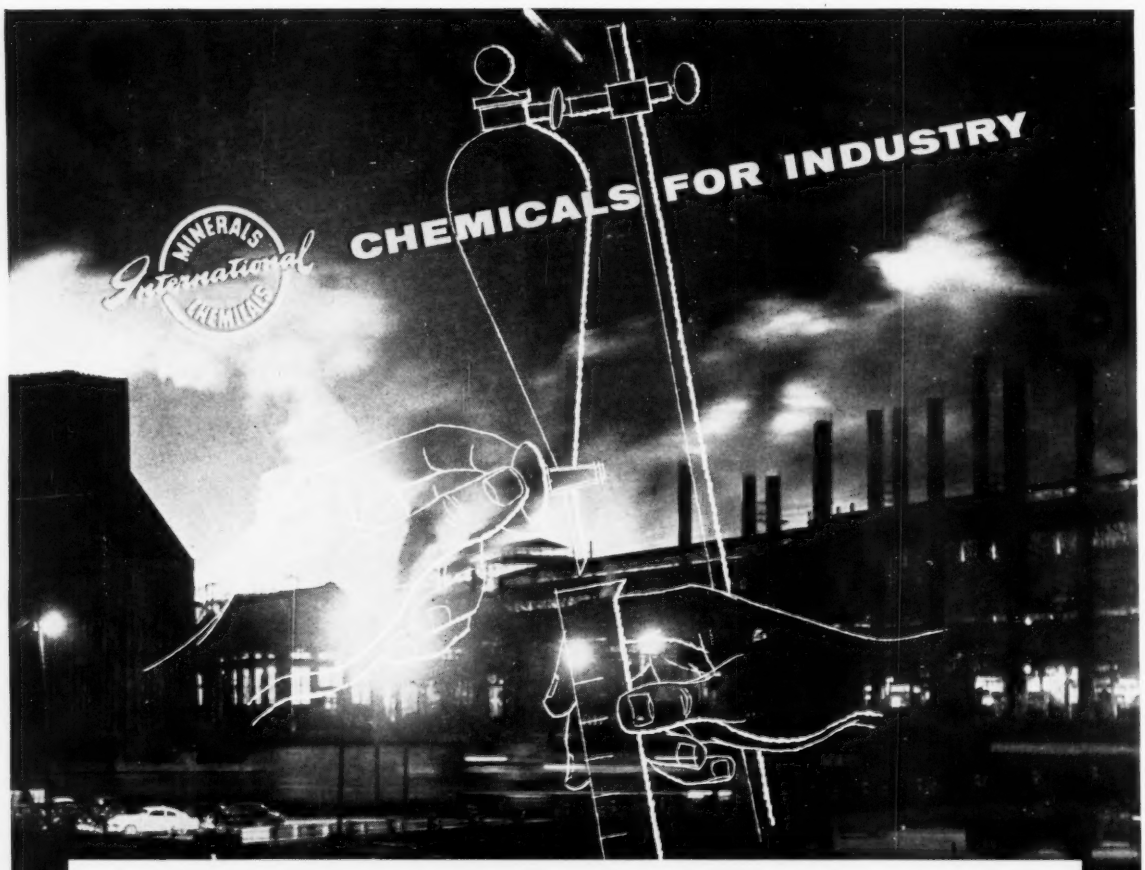
Rep's.: H. M. Royal, Inc., 4814 Loma Vista Ave., Los Angeles; Philipp Bros. Chemicals, Inc., 10 High St., Boston; H. L. Blachford, Ltd., 977 Aqueduct St., Montreal.



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In every drum or car of *International* industrial chemicals, you get extra ingredients which can make a big difference in the value of your investment. In product quality. In grade uniformity. In availability of materials. In prompt deliveries. In the understanding service of *International's* technically qualified field men and representatives. In their specialized chemical experience which you will find helpful in the selection of the materials and grades needed for maximum operating efficiency and economy. Please write or phone today for specific information about Carbonate of Potash, Caustic Potash, Magnesium Oxide, Muriatic Acid and other *International Chemicals for Industry.*

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Chemical Week

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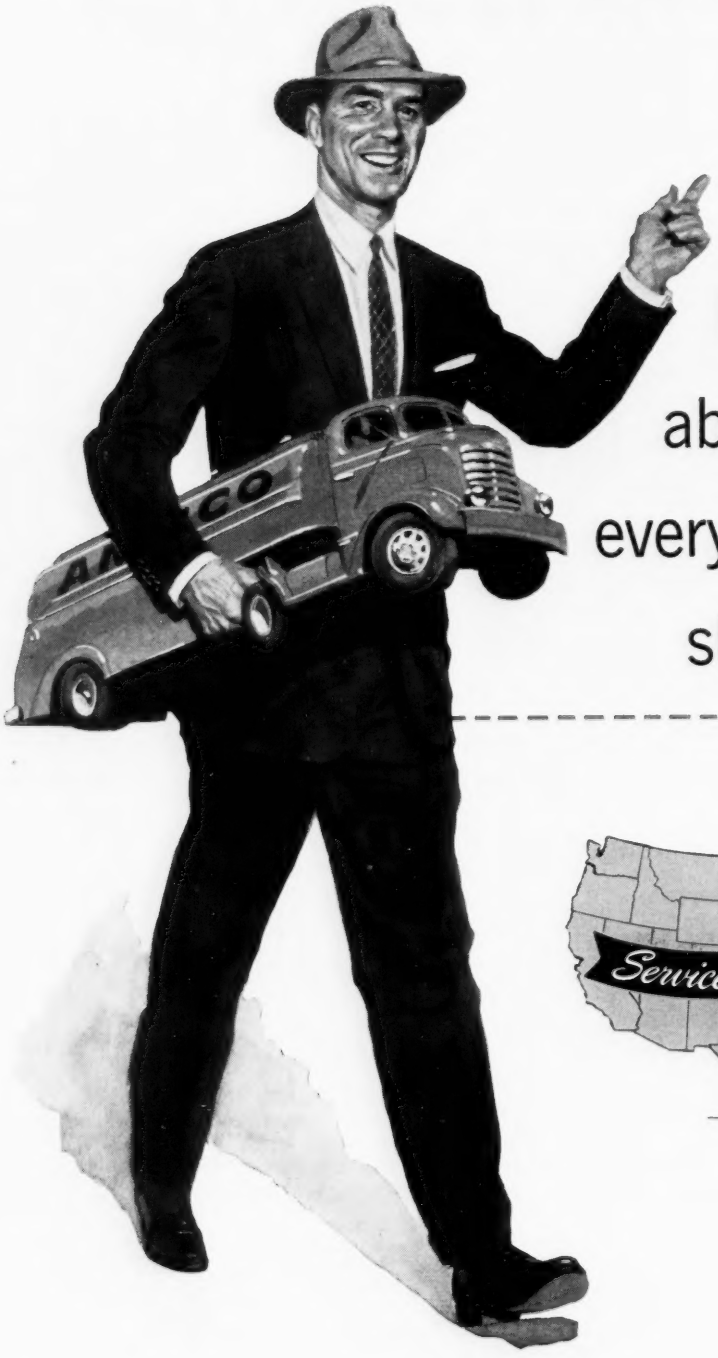
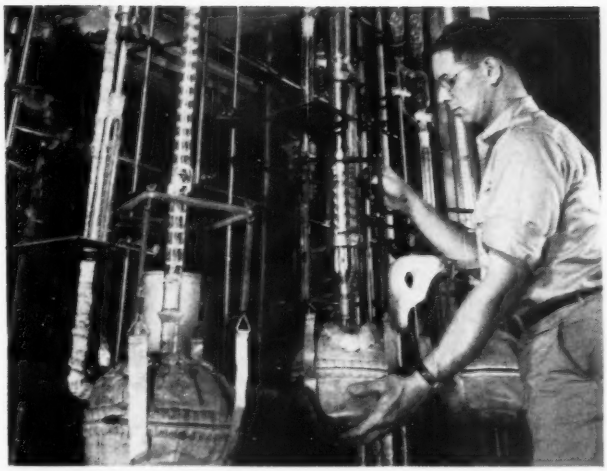


Four facts
about AMSCO
every solvent buyer
should know

is *first* solvents



1st in sales

Year after year, American Mineral Spirits Company has enjoyed the reputation of being first in petroleum solvent sales. This is partly because AMSCO offers industry the most complete line of solvents in America. But the main reason is—solvent users everywhere know they can trust the quality of AMSCO solvents.

1st in service

Wherever your plant is located, AMSCO can deliver solvents right to your door quickly, economically. No matter how you buy—barge, tank car, tank wagon, or a drum at a time, AMSCO's nationwide network of terminals, refineries and distributor facilities gets the shipment to you *fast!*

1st in research

Chances are you are using a solvent today that was pioneered by AMSCO. In the past 35 years, AMSCO scientists have developed many new solvents, either for general industrial use, or to suit the specific need of a single industry or manufacturer.

1st in technical aid

AMSCO representatives are experienced in solvent application, always ready to help you with your solvent problems. Feel free at any time to call in one of these solvent specialists for technical aid. This is what we mean by "Service Beyond the Sale." Just call or write the AMSCO office nearest you.

AMERICAN MINERAL SPIRITS COMPANY

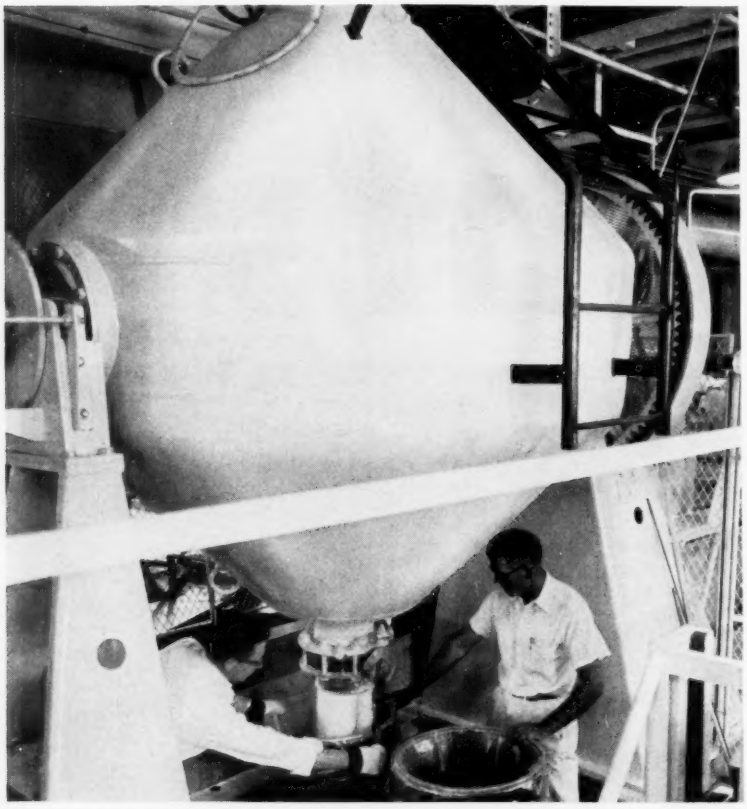
NEW YORK • CHICAGO • LOS ANGELES

General Eastern Offices, Murray Hill, N. J.

Cut drying time up to 90%. For information on Pfaudler glassed-steel dryer-blender, ask for Data Sheet 26.

Pfaudler

Pfaudler Corrosioneering News Published by The Pfaudler Co., a division of Pfaudler Permutit Inc., Rochester, N.Y.



Eliminates intermediate materials handling. Product goes from process into the Pfaudler conical dryer-blender, and then directly into package. Dried and blended in one operation.

Now Upjohn saves 32 hours drying 2500 pounds of Orinase

Sixteen hours are all it takes for the Upjohn Company to dry and blend 2500 pounds of Orinase in the Pfaudler conical dryer-blender.

It used to take forty-eight hours to dry that much of Upjohn's oral antidiabetic in two straight vacuum dryers.

Upjohn says it also saves eight hours a week in materials handling time with the new dryer.

Since it's a pharmaceutical, the product poses a purity problem which is nullified by the noncontaminating glassed-steel construction of Pfaudler dryer-blenders.

Other companies, many handling corrosives, report similar savings, some of them cutting drying time by as much as 90%. The smooth glassed surfaces of the drying chamber are insensitive to all corrosives except hydrofluoric acid and hot alkalies above pH 12.

The Pfaudler design offers a solid, one-piece drying chamber which offers maximum strength and drying area unbroken by joints or clamps. The vacuum exhaust tube is centrally located for the most efficient vapor removal.

There's much more about the Pfaudler dryer-blender that proves its efficiency of operation over other designs . . . all of it in Data Sheet 26 which you'll find offered in the coupon.

Corrosion resistance of glassed steel unimpaired by gamma radiation

No adverse effects could be detected from the exposure of glassed steel to gamma radiation in tests recently completed by Pfaudler in cooperation with Oak Ridge National Laboratory and other installations.

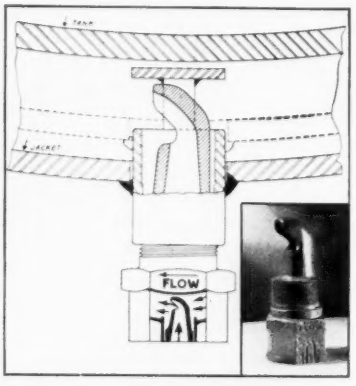
Preliminary evaluations have been completed on the test which exposed glassed samples to a total dose of 10^{10} roentgen from spent fuel elements.

Glassed steel is being considered as a construction material for chemical processing involving nuclear energy wherever corrosive conditions are particularly severe and ease of decontamination is important.

Probable uses of glassed steel in this vast field include storage of acids and other materials which may or may not be radioactive, storage and disposal of radioactive wastes, and chemical processing of highly radioactive and corrosive materials.

Both mechanical and corrosion tests indicate that Pfaudler glass is unaffected by gamma radiation up to 10^{10}r, although a color change does occur.

A larger test program is now under way to follow up these early results and to determine more conclusively the effect of radiation on glassed metals.



New data on turbulent flow in reactor jackets

Capacities and characteristics of the Pfaudler Agitating Nozzle and its superiority over the commonly used spiral jacket are discussed in a new

Corrosioneering News

Quick facts about services and equipment available to help you reduce corrosion and processing costs.

Bulletin No. 950. Working basis for the agitating nozzle is the use of kinetic energy. This is available through the pressure and volume of the heating or cooling liquid delivered to the reactor as a direct means of producing circulatory movement of entire contents of jacket. Capacity chart and typical hookup of nozzles are shown. Method of selecting nozzles is fully covered. Ask for Bulletin No. 950.

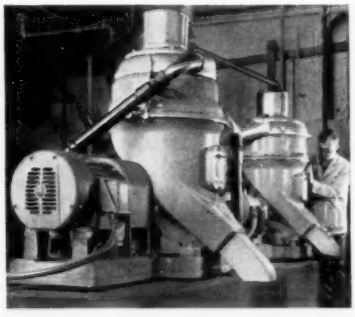
Pre-test lab takes all the gamble out of equipment buying

Whenever you engineer a process involving corrosives you're naturally a little more selective than you might be otherwise.

One way to satisfy this care in selection is to take advantage of the Pfaudler pre-test lab.

We'll run a sample of your product or materials through the equipment here at our lab, do an analysis, and show you what you can expect on the production line.

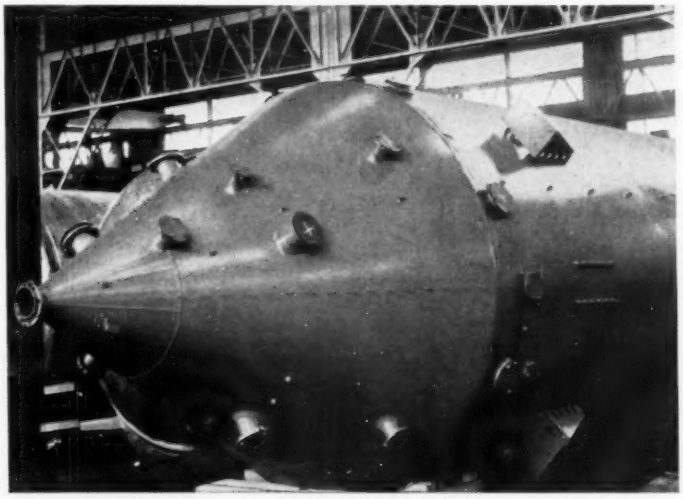
Our lab is equipped with 10, 30, and 300 gallon glassed-steel reactors, a two-foot glassed-steel conical



dryer-blender, model agitation units, heat transfer testing equipment, two self-desludging Titan centrifuges, wiped-film evaporators, and a complete pilot assembly for distillation and fractionating.

Any testing done is, of course, completely confidential. It can sometimes even be arranged for you to rent certain of the equipment for pre-testing in your own plant.

Either way you know exactly how everything works, before you make a purchase. Ask your Pfaudler representative for a pre-test questionnaire.



"Is Pfaudler making Sputniks?"

—This was an oft heard question recently from visitors to our Rochester plant. What they saw was this unusual new cone bottom reactor we fabricated and glassed for a leading chemical producer. All those nozzle openings on the conical surface made glassing a little "touchy," so it took us a little longer than with standard models.

The vessel is 388 inches long with a 138-inch OD, and will be used for storing and purging polymer chips at 160°F. An internal column does the purging with an inert gas.

Why do we show it here? To suggest that we can put the corrosion resistance of Pfaudler glass to work on more than conventional reactors, storage tanks, columns, etc.

THE PFAUDLER CO., a division of PFAUDLER PERMUTIT INC.
Dept. CW-28, Rochester 3, N.Y.

Please send information on ☐ Data Sheet 26 Conical Dryer-Blenders; ☐ Bulletin 950 Agitating Nozzles; ☐ Pfaudler Buyer's Guide.

Name .....

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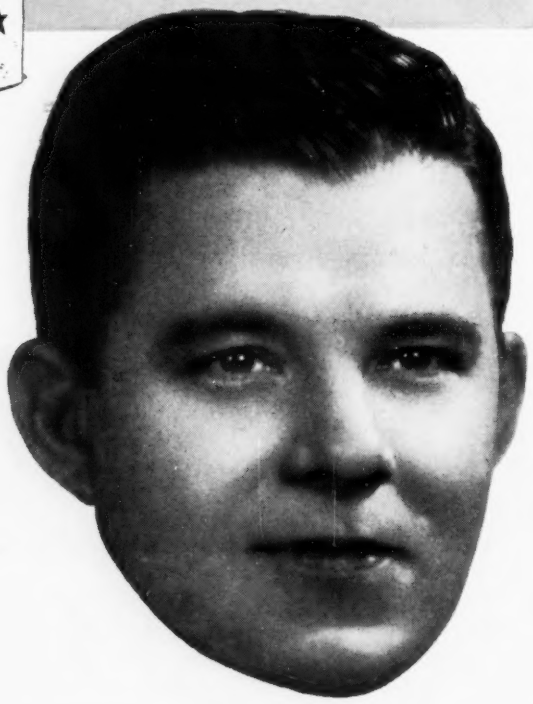
THE MAN WITH THE MULTIWALL PLAN



UNION PACKAGING ENGINEER ROBERT BOLLING

cuts 60 sizes from inventory of 20-million-Multiwall user

Impressive savings in cost, space, handling and inventory control

A leading manufacturer of plant food has simplified his Multiwall inventory problem, reduced his packaging costs, released valuable storage space, and saved an impressive number of man hours by revising the Specifications Manual which guided his company's purchase of 20 million bags a year.

Union Multiwall Recommendations are based on this 5-point Packaging Efficiency Plan

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

The opportunities for more efficient control were first pointed out by Packaging Specialist Robert Bolling of Union. With the consent of the manufacturer, Bolling then surveyed the company's complete bagging operation. The new Specifications Manual was one of the results. Savings are expected to run well over $100,000.

Union Multiwall Specialists have helped many companies effect substantial economies and gains in Multiwall performance. Ask about Union's 5-Point Packaging Efficiency Plan, and how you can take advantage of it without either cost or obligation.

Better Multiwall performance through better planning

union camp

UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

UNION MULTIWALL BAGS

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You get *lower unit cost*

Right: Factory-new ▶
Below: After 20 years ▼

with stainless containers from USS

The comparison above is proof of the lifetime service you get from USS Stainless containers. *The longer you use them, the more you save.* If yours is a product that needs the extra protection of stainless, then profit from US Steel's unequaled experience with this type container. Exclusive welded chimes . . . reinforced rolling hoops . . . five to 55-gallon capacities. Send for this free report on USS stainless containers . . . .

Profit from all 5 of these U.S. Steel extras, too:

- **Eye-catching containers** — your containers not only ship your product, but advertise it, too — when color-decorated by U.S. Steel.
- **Best rust protection** — there's more zinc phosphate on every USS rust-inhibited container.
- **Prompt container delivery** — a 7-point factory system gives you next-door service anywhere — any time.
- **Personalized container service** — your U.S. Steel salesman makes it his business to understand yours — to help you get the right containers for your needs.
- **Widest container variety** — from 2½-gal. pails to 55-gal. drums, including stainless.

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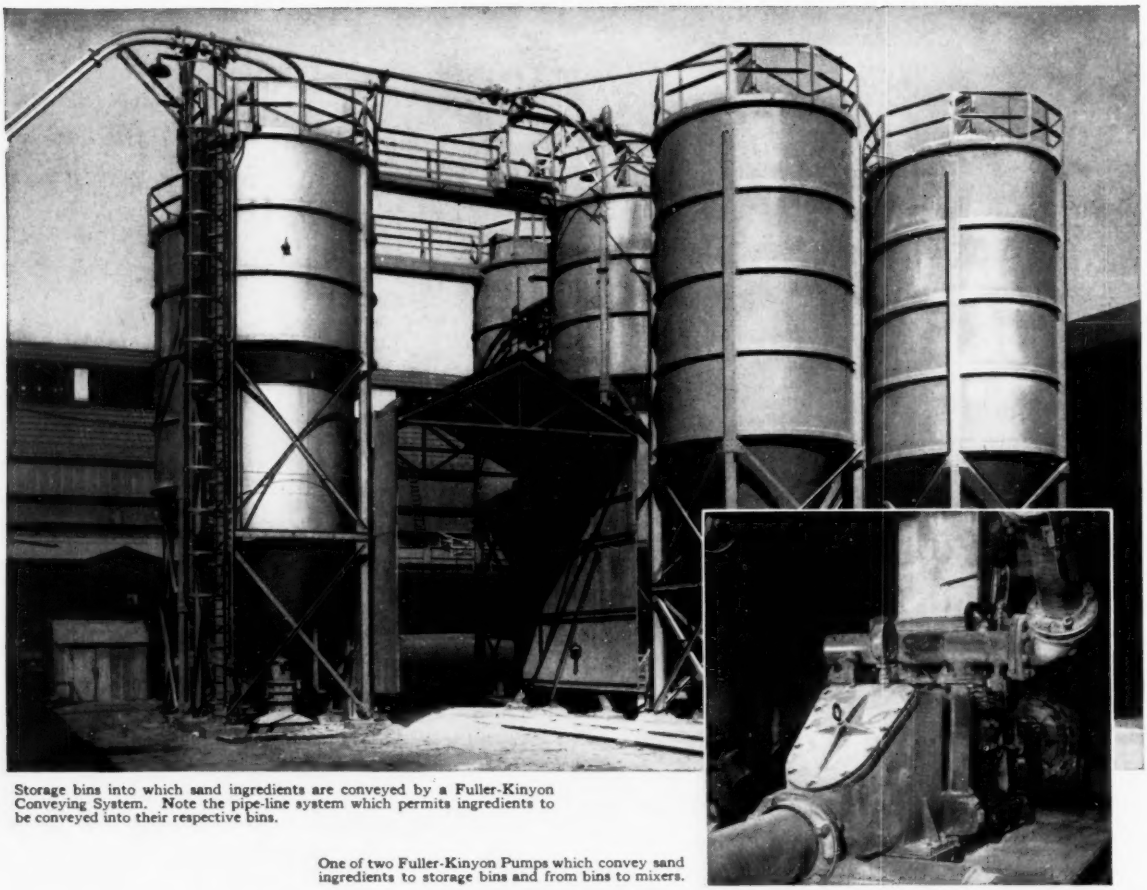

Storage bins into which sand ingredients are conveyed by a Fuller-Kinyon Conveying System. Note the pipe-line system which permits ingredients to be conveyed into their respective bins.

One of two Fuller-Kinyon Pumps which convey sand ingredients to storage bins and from bins to mixers.

FULLER-KINYON CONVEYING SYSTEM HANDLES THREE DIFFERENT MATERIALS EFFICIENTLY, WITHOUT WASTE

To reduce costs and speed up handling of foundry sand ingredients with minimum waste, General Steel Castings Corporation, Granite City, Illinois, installed a Fuller-Kinyon Conveying System.

Here's what it does for them—

The system unloads corn flour, silica flour and bentonite from hopper bottom cars by means of Fuller-Kinyon Pumps which convey these materials through pipe lines to a number of storage bins. The flexibility of the system makes it possible to unload cars in a fraction of the time that would be required manually, ***and***, waste due to spillage is eliminated. Two pumps used in the operation can be moved on narrow gage tracks for spotting under cars or bins. One pump is used mainly for unloading and delivery to storage—the other for delivery from storage to supply bins above the mixers. However, it is possible to unload cars and reclaim from storage simultaneously. Where bins are located so that they cannot discharge directly to a pump, an F-H Airslide® conveys from bins to the pump.

Prior to the Fuller installation, material was received in bags and manually unloaded, stored and transported to the mixers. It figures—*costs were much higher*. Now, waste has been eliminated! Another important feature—the company has realized extra savings by purchasing materials in bulk.

Fuller air-conveying systems are in operation in hundreds of plants throughout industry, cutting costs and increasing profits, day in and day out. The next time you have a materials-handling problem, why not get in touch with Fuller . . . chances are you will also profit.

FULLER COMPANY GENERAL AMERICAN

Fuller

. . . . pioneers in harnessing AIR

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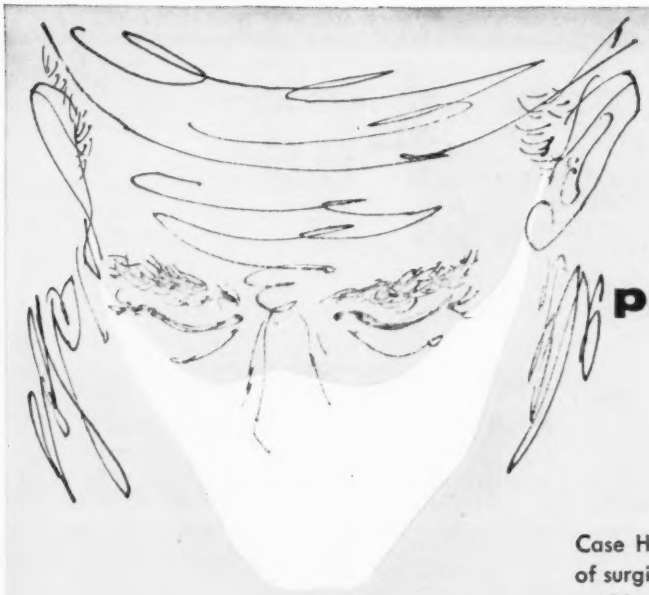

you, too, can profit from stability in OLEIC ACID

here's how Emersol 233 LL Elaine increases shelf-life of a surgical soap

Case History No. 83-02: A large manufacturer of surgical and germicidal soaps continually had problems of storage stability of a high grade surgical soap. The development of rancidity and changes in color were particularly disturbing to users of the soap especially where cleanliness and sterilization are imperative. Upon investigating Emersol 233 LL Elaine, this manufacturer found it so superior to the double distilled oleic acid he had been using, that it eliminated all problems of instability and odor development. Emersol 233 was also tried in other germicidal soaps in this manufacturer's line and the improvement in stability was again outstanding.

This is but one example of how outstanding stability improved a group of products. In any product, the replacement of ordinary oleic acids by a comparable Emersol grade prevents the development of rancid odors and avoids discoloration, breakdown of emulsions, changes in texture, and any deterioration of performance. So, why risk your products' good reputation when you can guard against failures so easily—by always buying the Emersol brand when you need oleic acids.

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Please send me 20-page Emeryfacts titled "Emersol Oleic Acid."

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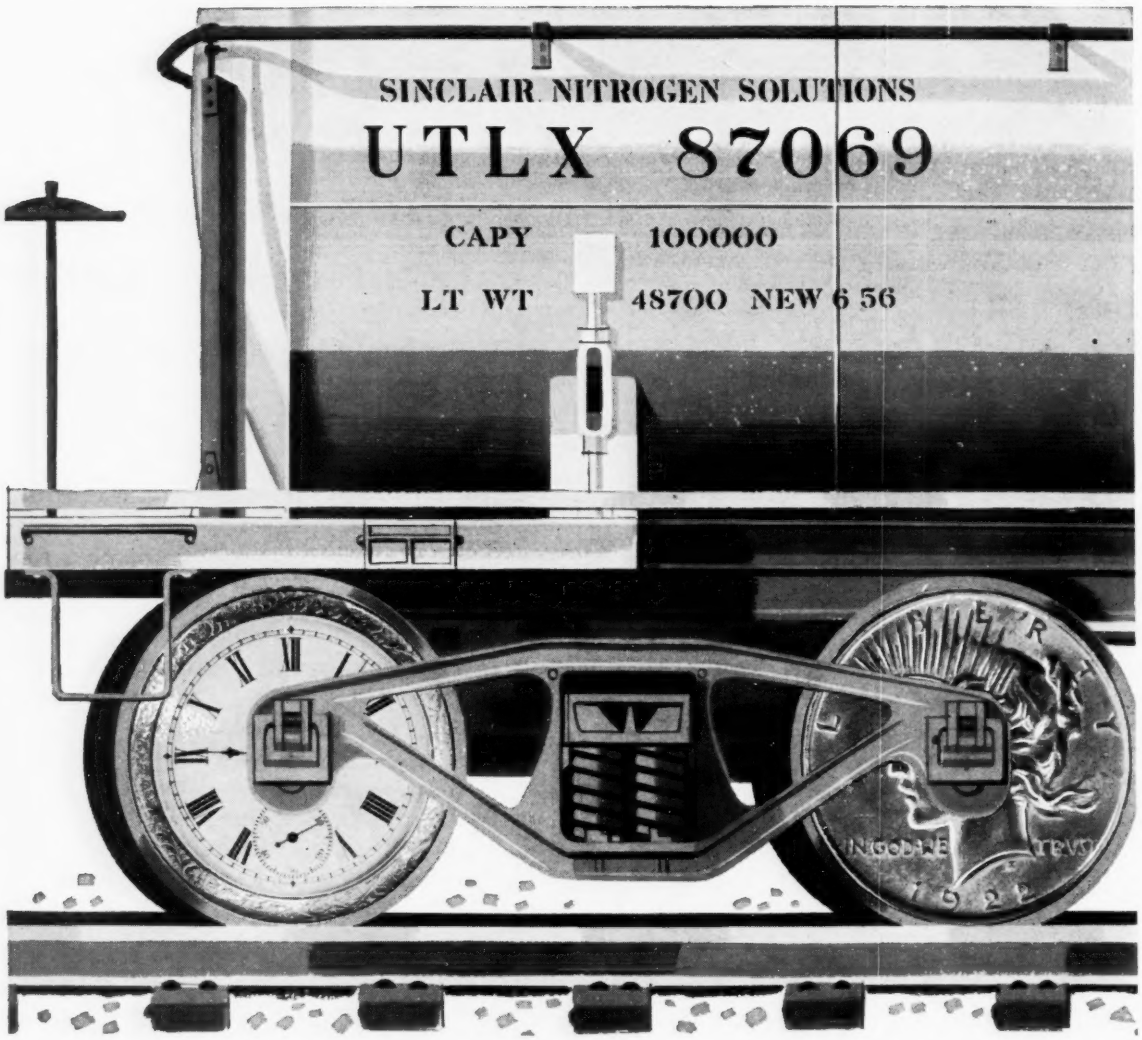
Company.....

Address.....

City.....State.....



How Rapid Delivery of Sinclair Nitrogen Products

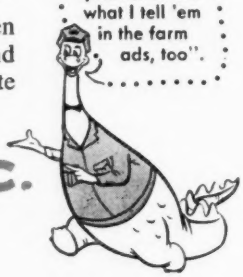
CAN SAVE YOU TIME AND MONEY

Rapid—on-time—delivery to your plant is an important reason why you should order nitrogen supplies from Sinclair. It can make the difference between filling an order at a profit or losing a sale and customer good will.

A big, new nitrogen plant at Hammond, Indiana, is in the center of the nation's rail and truck transportation network. Large storage facilities in this key location mean that your order can be filled for fast delivery when you need it.

For fast, low-cost delivery of nitrogen solutions, anhydrous ammonia and aqua ammonia call on Sinclair. Write or phone . . .

Dino, the Sinclair Dinosaur, says, "Fertilize for greater farm profits. That's what I tell 'em in the farm ads, too".



SINCLAIR CHEMICALS, INC.

(Affiliate of Sinclair Refining Company)

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OPINION

Adhesives Research

TO THE EDITOR: We have at hand . . . your Dec. 21 issue, which contains the article on the requirements of adhesives for the wooden pallet industry. . . .

You are to be commended on the excellent way in which you handled this article on the need for research in adhesives for the wooden pallet and container industries. We hope that it arouses a great deal of interest, and that the necessary research will be initiated by adhesives manufacturers in the near future. . . .

WILLIAM H. SARDO, JR.
Executive Vice-President
National Wooden Pallet Mfrs. Assn.
Washington, D.C.

Capitalize Sesoxane

TO THE EDITOR: The name Sesoxane (note capital "S") is Shulton's trademark for 2-(2-ethoxyethoxy)ethyl-3,-4-methylenedioxyphenyl acetal of acetaldehyde. Your "scooping" news squib (*Dec. 21, '57, p. 50*) referring to our product Sesoxane as a synergist for methoxychlor failed to indicate this.

Your readers will be interested to know that the wide range of effectiveness of Sesoxane as a synergist for pyrethrins, allethrin, and now methoxychlor, should make it possible to prepare for the first time, single, safe formulations for effective, quick knockdown-kill and residual activity against both flying and crawling insects. . . .

GEORGE F. FOY
Fine Chemicals Division
Shulton, Inc.
Clifton, N.J.

Greasy on Purpose

TO THE EDITOR: In your very excellent story on Fluid Film for corrosion control (*Jan. 4, p. 37*), two items require a little clarification.

First, in stating the amount of Fluid Film to be used, the volume required for heavily rusted surfaces should read 10 gal./100 sq. ft.

Second, the next-to-last paragraph of the article reads: "But the film has one unavoidable drawback: it is a soft, greasy film, . . ." This is apparently a misconception, since Fluid Film is designed to be a soft, grease-like coating. The reason is important in consideration of corrosion control. Dry or rigid coatings are subject to cracking, skips, nonadhesion, etc. Through the mechanism of a continuously soft, nondrying reservoir provided by Fluid Film, the metal surfaces are constantly bathed in the active, mobile, nonvolatile and nonwater-soluble corrosion-control constituents. This mobility assures corrosion control, provides self-healing of abraded areas, and complete flexibility of the coating to compensate for any metal expansion or contraction due to changes in temperatur or other physical distortion.

We do not recommend the material for use on traffic surfaces because it would be slippery, nor do we suggest that it be used where there would be constant contact with clothing, although the material is easily removed from fabric with solvent. Neither is Fluid Film intended for use in petroleum solvent tanks. An entirely different characteristic is required for this purpose and such a product will shortly be available. . . .

RAE R. HESS
President
Eureka Chemical Co.
San Francisco

MEETINGS

American Institute of Mining, Metallurgical and Petroleum Engineers, annual meeting, Hotel Statler and Hotel Sheraton-McAlpin, New York, Feb. 16-20.

Chemical Institute of Canada, 12th divisional conference, protective coatings subject division, Toronto, Feb. 20; Montreal, Feb. 21.

American Management Assn.'s Research and Development Division; special conference; how to adjust to changing business conditions; Biltmore Hotel, New York, Feb. 19-21.

American Society of Mechanical Engineers, International Gas Turbine Power Division conference and exhibit, Shoreham Hotel, Washington, March 3-6.

Assn. of Consulting Chemists and Chemical Engineers, symposium and banquet, Shelburne Hotel, New York, March 5.

New York Board of Trade, Drug, Chemical and Allied Trades Section, 32nd annual dinner, Waldorf-Astoria Hotel, New York, March 6.

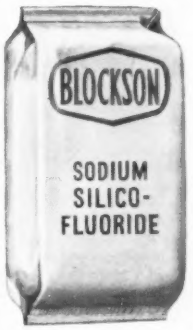
Blockson has the stand-by capacity to stand by its

SODIUM SILICO-FLUORIDE customers

with Blockson as your SSF supplier you can

PLAN AHEAD SAFELY

The largest Sodium Silicofluoride manufacturer, Blockson has stand-by capacity PLUS a plant expansion program that builds well ahead of its customers' increasing needs.



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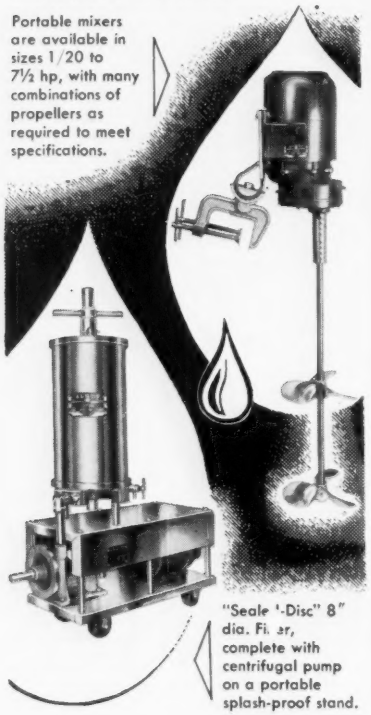

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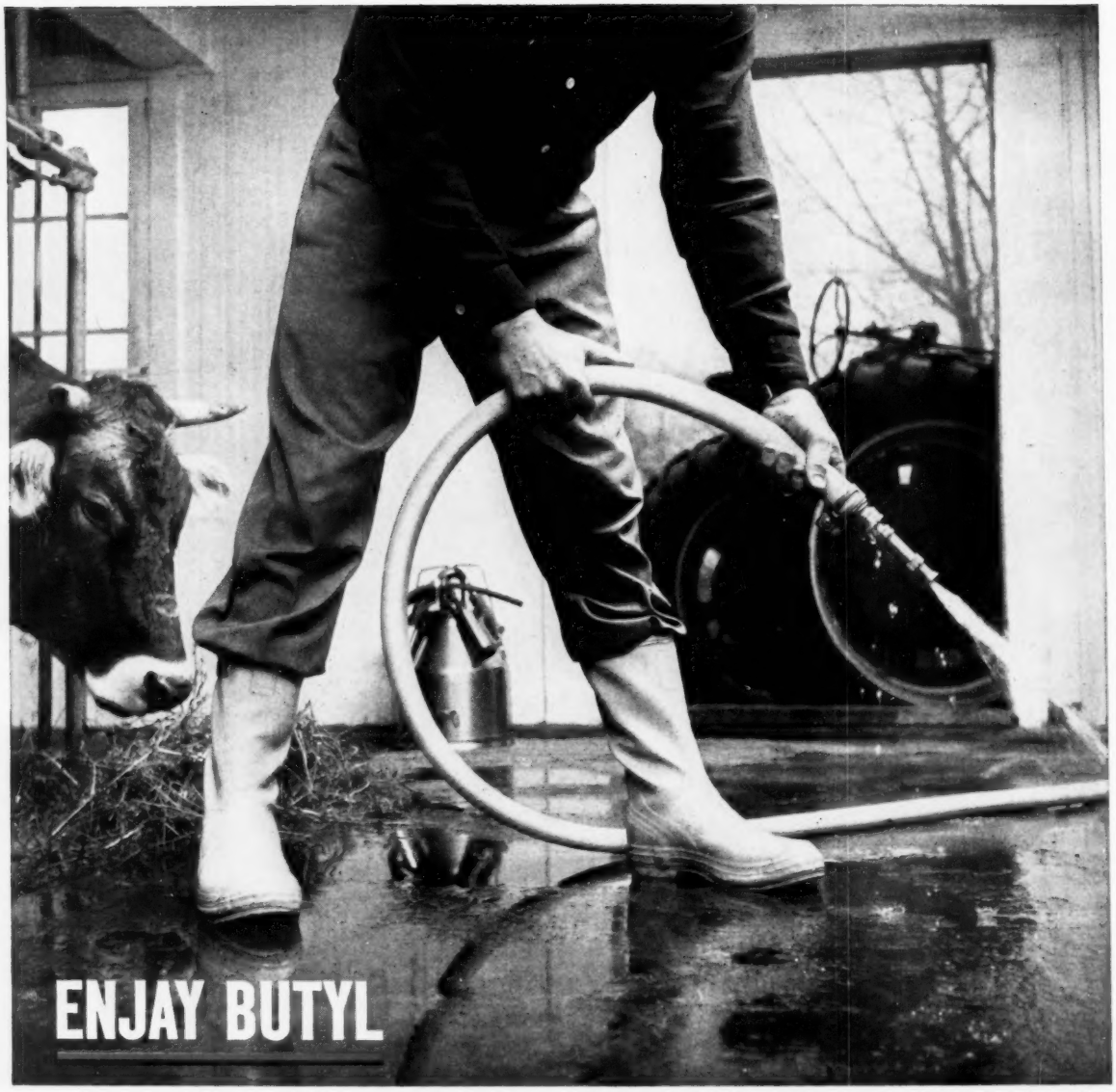

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Business Newsletter

CHEMICAL WEEK
February 15, 1958

Still more overlapping of the chemical and missile industries is in the cards.

• Pennsalt Chemicals Corp. (Philadelphia) will build two plants to manufacture ammonium perchlorate for solid-propellent use. First unit is being built adjacent to Pennsalt's sodium chlorate plant at Portland, Ore.; the second, and larger, unit is being planned for "a yet-unannounced location in the South."

• And U.S. Chemical Milling Corp. (Los Angeles) is acquiring all outstanding capital stock of Missile-Air, manufacturer of precision missile and aircraft components.

Pennsalt—a pioneer in development of elemental fluorine and other high-energy fluorine chemicals used in missile fuel systems—will be the second U.S. producer of ammonium perchlorate. The other is American Potash & Chemical. Also, Pennsalt says it has just developed a larger and improved electrolytic cell for production of elemental fluorine—important in making many types of high-energy fuels.

The Missile-Air acquisition, says President Charles Lundquist, of the chemical milling concern, is the first of a series of moves to extend the scope of his corporation and broaden its operating base.

•

Evidence is piling up on the importance of foreign markets to U.S. chemical producers.

One indication comes from Monsanto Chemical. Its foreign subsidiaries and affiliated companies increased their sales and earnings last year, while domestic income was dropping slightly. Monsanto reports that its branches in Britain, France, Mexico, Canada, Japan, Panama, Australia and India are all operating profitably now.

Another indicator: the number of U.S. chemical companies entering into ventures abroad. Latest is Argus Chemical Corp. (Brooklyn, N.Y.), maker of vinyl stabilizers and plasticizers. It has just agreed to join with Belgium's Union Chimique Belge (Brussels) to form a new European producing and marketing company, SA Argus Chemical NV. Also, Argus has struck up a licensing arrangement with Britain's Lankro Chemicals Ltd. (Manchester) covering Argus stabilizer rights in British markets.

•

West German industrial-chemical industry set an export record last year: $260 million. (Industrial chemicals account for about 24% of Germany's total chemical exports.) It was a 17½% jump over the '56 total. Best customers: European common-market neighbors. They bought 40% of all the German chemicals, with Switzerland topping the over-all customer list. In Asia, India was the biggest buyer. A continuing drop in exports to Argentina has been worrying the Germans (*see also p. 75*) but Brazil's chemical purchases remained about the same as in '56.

In Germany, Farbwerke Hoechst reports a record year. Sales in '57 for the big German chemical firm hit $419 million, 18.9% higher than '56. Exports accounted for 32.3% of sales, totaling $135 million, compared with $105 million in '56. Hoechst also channeled $53.5 million into new plants and equipment, $21 million into research, and invested $6.3 million in joint ventures with foreign firms.

•

News of a possible green light on export business perked up prospects for uranium processors last week. Jesse Johnson, director of Atomic Energy Commission's Raw Materials Division, says AEC is studying plans to let uranium companies sell to foreign markets to help get rid of surplus ore. The potential: 3,500 tons/year of concentrate for the $6-billion, 10-year Euratom project (*see p. 24*) and 1,000 to 2,000 tons a year for Britain's extensive atomic energy program.

•

Another boost for companies with a stake in uranium could come if Congress heeds the recommendations of a poll of the atomic industry by Atomic Industrial Forum (New York). The government, according to the majority of companies polled, should accelerate atomic development in two ways: increase research activity, primarily in privately owned facilities; modify AEC procurement policies "to increase economic incentives."

•

Chemical businessmen will have a new chance to air tariff views soon. Tariff Commission will open public hearings March 4 on tentatively revamped schedules for "Animal and Vegetable Products" (including fats and oils) and March 11 on "Chemicals and Related Products." The commission prepared the schedules, under terms of the Customs Simplification Act of 1954, to update and simplify import classifications. After the hearings, the commission will submit the schedules to Congress.

On Jan. 20, under another section of the act, the commission published a list of items exempted from the act's new duty-setting formula (*CW, Feb. 8, '58, p. 32*).

•

The year-end sag in sales (see p. 20) was not enough of a drop to keep the industry from setting a new sales record in '57. Preliminary figures on December sales of chemicals and allied products make the '57 total $23.4 billion, compared with $23.3 billion in '56. The December sum was $1,729 million, compared with $1,780 million in the final month of '56.

Latest company statements are encouraging:

• American Cyanamid's '57 sales and earnings were up 6% and 16%, respectively, over '56 levels. Consolidated net sales amounted to $532.5 million, and consolidated net earnings totaled $51.35 million.

• Michigan Chemical pushed its sales up 44.9% to $9.57 million and boosted net income 111.1% to $752,814.

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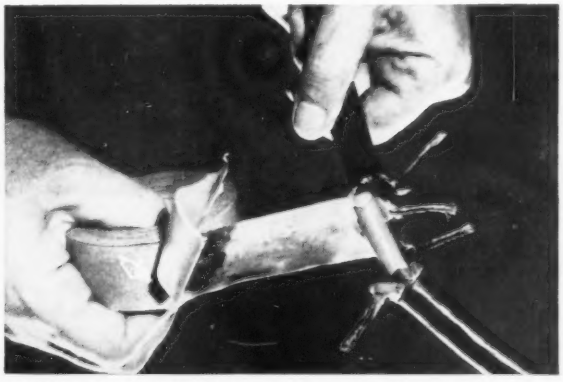
ENCOURAGE YOUTH—Pictured with Hercules Vice President Paul Mayfield are winners in the National 4-H Entomology Awards Program. Agricultural Chemicals Division thus plays a part in the development of farm and civic leadership.



CREATE NEW PRODUCTS—Rubber and Asbestos Corporation depends on two Hercules tackifying agents for the unique characteristics of its new "Tackmaster" pressure-sensitive film used in the tape shown. The Hercules materials help provide the high tack, quick stick and grab necessary in such films, plus easy separation from the protective release paper.

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FOURTH-QUARTER DIPS HIGHLIGHT EARLY FINANCIAL REPORTS

	4th Qtr. '57 Sales	4th Qtr. '57 Earnings	'57 Sales (million
Air Reduction	up 6.6%	down 0.9%	190.0
Allied	down 5.1%	down 12.1%	683.1
American Cyanamid	up 11.6%	up 35.2%	532.5
Atlas Powder	down 2.1%	down 22.8%	70.0
Union Carbide	down 0.9%	down 24.4%	1,395.0
Catalin	down 3.5%	down 0.7%	23.8
Dow[4]	up 0.1%	up 8.2%	657.7
Eli Lilly	up 4.0%	down 9.3%	199.8
Freeport Sulphur	[1]	down 0.3%	63.3
Harshaw[5]	up 9.1%	down 25.7%	67.5
Hercules	down 1.9%	up 10.2%	245.3
Hooker	up 0.3%	up 8.7%	107.9
Kaiser Alum. & Chem.	up 17.1%	down 50.3%	391.6
Monsanto[6]	down 3.1%	down 34.5%	567.1
National Distillers[7]	down 5.4%	up 7.2%	538.5
Rayonier	down 11.6%	down 55.1%	117.5
Reichhold	down 3.6%	down 35.4%	65.3
Rohm & Haas	down 3.6%	down 19.5%	174.1
Spencer[5]	up 8.8%	down 6.5%	50.8
Smith, Kline & French	up 12.8%	up 44.3%	115.5
Stauffer	down 1.2%	down 14.9%	157.0
Wyandotte	up 6.3%	up 35.4%	85.0

(1) Not reported.
(2) Excludes $7.8 million from sale of U.S. Steel stock.
(3) Includes $365,000 tax credit.
(4) 12 months to Nov. 30; (5) 12 months to Dec. 31.
(6) Figures exclude revenue from partially owned companies and foreign subsidiaries.
(7) Figures include adjusted income from National Petro-Chemicals.

Despite Year-end Dip in Profits, CPI

Despite a fourth-quarter nose-dive in profits, chemical process companies generally are going ahead with the extensive construction and modernization programs they blueprinted last September (CW, Nov. 9, '57, p. 24).

And, although lagging sales and scattered layoffs are being felt throughout the industry, most CPI management men classify this downturn as a short-term setback. Some even say that the upturn has already started.

Preliminary reports from 15 of 21 companies listed in *CW's* regular company earnings survey (*CW, Nov. 9, '57, p. 26*) show profits substantially off for the last quarter of 1957. And 11 of the 20 companies reporting sales figures failed to match their volumes of the corresponding quarter of 1956.

Declines in 12-month totals, though disappointing, were not as severe as the fourth-quarter drop. The 1957 profits of 12 (of the 21) companies were below 1956 levels, but only five failed to equal their '56 sales.

Construction Down: Further detail for the business picture comes from a confidential *CW* survey of major engineering and construction firms. Of the 14 firms reporting, 12 have felt a drop-off in contracts signed during the past six to eight months.

For some, the total value of business for the last six months of '57

ROM 21 CHEMICAL FIRMS

'57 Earnings dollars)	Profit Margin	Total '57 Sales	Total '57 Earnings
16.5	8.7	up 11.9%	up 4.7%
43.4[2]	6.4	up 2.1%	down 7.7%
51.3	9.6	up 6.4%	up 16.0%
4.1[3]	5.9	up 4.3%	down 1.6%
133.7	9.6	up 5.3%	down 10.9%
0.5	1.9	up 5.7%	up 18.0%
57.5	8.7	up 5.2%	up 2.8%
32.3	16.2	up 10.1%	up 7.5%
13.0	20.5	down 10.0%	down 3.0%
2.2	3.3	up 4.9%	down 10.9%
18.1	7.4	up 4.0%	up 2.3%
8.8	8.2	down 1.9%	down 23.0%
26.8	6.9	up 14.0%	down 36.7%
37.4	6.6	up 4.7%	down 3.2%
23.0	4.3	down 0.8%	up 1.7%
6.3	5.3	down 14.8%	down 55.3%
3.0[8]	4.6	up 10.3%	up 61.6%[9]
15.6	9.0	up 6.1%	down 2.9%
5.2	10.2	up 8.4%	down 11.4%
20.6	17.8	up 10.4%	up 14.0%
13.1	8.4	down 1.3%	down 4.7%
4.8[10]	5.6	up 6.8%	up 7.6%

(8) Includes $675,000 profit from sale of investments.
(9) '56 includes $104,000 from sale of investments.
(10) Excludes $2.1 million from sale of Alpena quarries.

Keeps on Building

dropped more than 100% from the same period of '56. At least four of these firms felt a severe enough pinch to warrant laying off drafting, engineering, and construction personnel. On the other hand, four others report that they increased their professional staffs between Jan. '57 and '58.

Viewing prospects for this year, the builders express mixed feelings. Few are openly "bullish." The early months are generally slow anyway, but several firms report fewer inquiries and quotations this year than in corresponding periods of other years.

Along with other businessmen, plant builders hesitate to prognosticate. Many express the "expectation" that business will pick up "later in the year." One firm expresses tempered optimism this way: "We anticipate considerable pick-up in '58. We've made quite a few quotations—but the contracts haven't been signed yet."

No Surprise: This slowdown in CPI expansion is not a sudden development. Last fall, the McGraw-Hill survey of capital spending plans indicated a 4% drop in spending for the chemical industry, and deeper cuts in other process industry segments. By late summer, the present decline became evident, and the related overcapacity, especially in the process industries, had already tempered expansion plans for '58.

Holding the Line: Unless the recession deepens beyond all but the gloomiest expectations, the industry will ride along on present expansion plans. Talks with top management this week indicate that most firms' confidence in the long-term future is not shaken.

But, partly because there is disagreement about its cause, opinions vary about how long the slump will last. Some believe business will pick up when inventories are worked off, possibly by the summer. Others are more worried about what the consumer will do. They feel a powerful boost from the government will be necessary to stimulate buying.

There is, however, general agreement about what should be done now. Glen Miller, Allied Chemical president, tells *CW*: "While we don't know when there will be an upturn, we are going ahead with expansion plans. We can't squeeze them like an accordion every time there is an economic dip. We are building for one or two years ahead."

And A. E. Albright, assistant to the president of Stauffer, says: "We don't think the recession is long-term, so there's no reason to change our long-term plans." But Stauffer is tightening its belt, slashing "overhead fat," and "weeding out" unnecessary personnel.

From two other firms comes more optimistic news. Henry Reichhold, Reichhold Chemicals president, says that for his company, the recession has already dissolved, and that business this January topped last January's.

And Rohm & Haas reports a substantial pick-up in orders during the past few weeks.

Constructor O'Connell: Calls new code a stimulant to plant building.

Bringing Down Labor Costs

Lower labor costs in plant construction and higher labor costs in plant operation are in prospect this week following the AFL-CIO executive board's annual winter conference at Miami Beach last week.

First, AFL-CIO's building trades unions entered into an agreement with a construction industry association to keep from having too many men on a job. Then AFL-CIO's chemical unions started working out programs aimed at preventing situations in which too many men are off the job.

The antifeatherbedding pact between Building Trades Dept. of AFL-CIO and National Constructors Assn. (New York) is intended to help cut construction costs. The aim is to encourage companies — particularly those building oil refineries, steel mills, chemical plants and utilities— to go ahead with expansion and modernization projects.

Long Wait for Results: Bechtel Corp.'s Vice-President John O'Connell signed the agreement for the contractors and President Richard Gray, of Building Trades Dept., headed the unions' delegation. But while there doubtless was a harmonious meeting of the minds at the top level, it appeared that a long time might elapse before the understanding bears fruit in the form of lower construction costs.

Gray-Reuther Treaty: Another move that may eventually prevent costly delays in plant change-overs and major repair projects: an accord between the building trades unions (which were the mainstay of the former AFL before the 1955 merger) and the industrial-type unions (most of which were in the old CIO).

Under this interunion agreement to avoid jurisdictional disputes, the building trades unions will get preference on new construction; the unions in Industrial Unions Dept., headed by Walter Reuther, will have the inside track on plant operation and running maintenance. The area in between— involving alterations and major repairs—will be allotted on a job-by-job basis, with three-man teams of referees to settle interunion conflicts.

Stress on Job Security: In 1958 bargaining for process industry plant workers, Oil, Chemical & Atomic Workers and International Chemical Workers Union will both hammer at the unemployment issue.

During the Miami Beach meetings, OCAW Vice-President Elwood Swisher told *CW* that a nearly completed survey—to be used in formulating new bargaining programs—indicates that out of the union's 200,000 members, about 10,000 are now out of work. In January alone, he added, some 1,900 asked for withdrawal cards.

One point of the survey is to learn what's causing the drop in employment in chemicals and oil—whether it's mainly due to automation, in which case the loss of jobs would be regarded as permanent; or whether it's chiefly because of the current economic downturn, in which case the layoffs would be considered temporary.

Share-the-Work Goals: OCAW will hold a bargaining strategy session Feb. 22-23 in Denver, and it's expected that findings in the survey will lead to recommendations for benefits that are conceived to be aids in minimizing the layoff problems— such as higher severance pay and longer vacations. Possible but unlikely goal: supplementary unemployment benefits.

And leaders of AFL-CIO's other chemical union are singing a similar tune. In a recent talk to Illinois members, ICWU Vice-President Laron Judd blamed the current recession and unemployment situation on a decline in consumer purchasing power and the trend toward automation. His suggestions included early retirement, higher severance pay, shorter work week, employee training programs, and revised seniority rules.

Privately, chemical union leaders concede they're in a difficult spot for collective bargaining this year. The combination of economic recession and rising unemployment means a poor vantage point for locals at the bargaining table.

Nevertheless, OCAW is expected to tell its locals to seek hefty wage increases this year. Recommendation for the initial demand is likely to be between 8 and 12%. There's an undercurrent of pessimism about prospects for a big wage hike this year, but union leaders will insist that pay rates should rise by at least the 3.4% that they calculate as the average increase in cost of living since '57 contracts were signed.

W-L's Driscoll: the whole comes out bigger than the sum of its parts.

Mergers Make Might

Warner-Lambert Pharmaceutical Co.'s president, Alfred Driscoll, made his presentation before New York financial analysts last week. And Driscoll, former governor of New Jersey, found it politic to be modest about W-L's growth—largely via mergers—since 1951.

In short, '57 sales and earnings are up more than 60% and 100%, respectively, over the combined sales and earnings of the five predecessor companies in '51, the year before the merging started (*CW, April 13, p. 78*). Profit margins for the individual companies in '51 averaged 7%; the '57 figure, based on Driscoll's preliminary report (official annual report is due out Feb. 27), will be more than 8.75%.

The year '52, when Warner acquired Chilcott Laboratories, marked the low point for the group as a whole. Then, the combined net income went down from $8.1 million in '50 to only $6.1 million, despite the fact that sales had risen in that same two-year period from $92.2 million to $99.7 million. Average profit margin in '52 was 6.1%.

Things began picking up in '53; combined net income rose to $7.3 million and profit margin climbed to 6.7%. They advanced to $8.2 million and 7.4% in '54 and to $10.6 million and 8.7%, respectively, in '55—the year of the merger with Lambert Co. The other two companies—Emerson Drug and Nepera Chemical—came into the corporate entity in '56, and in that year net income rose to $11.4 million, though profit margin dipped to 8.3%. Anticipated results for '57: domestic sales, nearly $160 million; net income, at least $14 million.

Though Driscoll described his outlook for '58 as "conservatively cautious," a number of his remarks reflected optimism: he sees no signs of a halt in the pharmaceutical industry's growth trend; and for Warner-Lambert in particular, he sees continuing gains through new ethical formulations, consolidation of marketing divisions, and expanding operations abroad.

One boost to profit margins will come from lower operating costs. The move to brand-new facilities has already started paying off, Driscoll told the analysts. This year, Warner plans to spend another $4 million on capital improvements, and another $1 million from overseas funds. No borrowing is planned.

Freeze-out Rebuffed

Though doughty old John L. Lewis can and does boycott the National Labor Relations Board, the NLRB can't boycott John L. Lewis.

That's the upshot of a recent U.S. Supreme Court ruling in a case involving District 50 of Lewis' United Mine Workers of America, which claims representation of 100,000 employees in chemical process companies.

Lewis and UMWA have disdainfully refused to comply with various provisions of the Taft-Hartley Act, and consequently are not eligible to make use of NLRB services. Accordingly, this union is never listed on ballots in plant elections conducted by NLRB, and can't ask the board to investigate charges of unfair labor practices.

In the case at hand, NLRB had found that Bowman Transportation, Inc. (Gadsden, Ala.), had granted recognition to District 50, to forestall an organizing drive by the Teamsters' union, even though its employees had not chosen that union as their bargaining agent. The board ordered Bowman to withhold such recognition until District 50 was certified by the board—and it's clear that NLRB cannot certify a union that isn't in compliance with Taft-Hartley.

District 50 took the freeze-out order to court and came out on top. The Supreme Court said that the labor board could not in that manner block recognition of the union. The decision—written by Justice William Brennan—suggests that NLRB could hold an election without certifying a winner; or it could request another federal or state agency to conduct an election.

First Step for Vickers

The petrochemical industry had notice of a new member last week, as The Vickers Petroleum Co., Inc. (Wichita, Kan.), announced formation of its Chemical Division.

Heading up the new division is William Jackson, vice-president of research and development and technical assistant to the president.

Vickers' immediate plans center around getting its $2.5-million, 15-million-gal./year benzene-toluene-xylene plant onstream in April. Construction crews at the Potwin refinery are bucking severe weather.

A new fleet of 100 tank cars will carry the BTX and other high-purity aromatics to chemical and solvent producers in Midwestern areas.

"We have more plans than we can count," Jackson tells *CW*. He is studying the oxo process with other firms, would like to supply 9- and 10-carbon-aromatic isomers on a "captive supplier" basis. Acetylene production is another possibility.

Vickers' Jackson: 'We have more plans than we can count.'

COMPANIES

Petro-Tex Chemical Corp. (Houston) and Plymouth Oil Co. (Pittsburgh) have signed a long-term agreement for producing alkylate. Petro-Tex is building a 3,000-bbls./day sulfuric acid alkylation plant in Houston. It's due for completion in '59. Part of the alkylate will be made from Plymouth feed stock and will go back to Plymouth. For its own alkylate (aviation grade), Petro-Tex will start with butylenes from its butane dehydrogenation plant.

Petro-Tex is jointly owned by Food Machinery and Chemical Corp. and Tennessee Gas Transmission Co.

•

Emery Industries, Inc. (Cincinnati), has acquired the Vopcolene Division (Los Angeles) of Vegetable Oil Products Co. Vopcolene is reported to be the only West Coast producer of a diversified line of fatty acids. Last year, Emery acquired the fatty acid facilities of S. F. Lawrason & Co. in London, Ont., and agreed to build a $4-million plant in Nitro, W.Va., with Monsanto.

•

Diamond Alkali Co. (Cleveland) is expanding the market research activities of its commercial development department to provide more service on existing products.

•

Kennecott Copper Corp. has purchased the holdings of Consolidated Coppermines Corp. in White Pine County, Nevada. The sale includes Coppermines' Tripp Pit, its holdings in Kennecott's adjacent pits, and the company-owned community of Kimberly. Coppermines retains its interests outside of White Pine County.

EXPANSION

Synthetic Rubber: Polymer Corp. (Sarnia, Ont.) has allocated $10 million for capital contruction in '58. The synthetic rubber producer—owned by the Canadian government—says it will use the funds to complete projects under way and to cover costs of new projects aimed at meeting "increasingly stiff competition."

•

Sulfuric Acid: A $1-million sulfuric acid plant being built for Allied Chemical & Dye Corp. at Anacortes, Wash., is scheduled for completion by midyear. The plant will supply acid to Shell Oil's refinery on adjacent ground. Fluor Corp. is building the acid plant and an alkylation unit in the refinery.

•

Agricultural Chemicals: Two firms are expanding agricultural chemical production facilities in the South:

• California Spray Chemical Corp. (Richmond, Calif.) will build a $15,000 liquid phosphate spray unit at its Bossier Parish, Louisiana, plant, stepping up production of liquid products there by 30%. And a $25,000, 6,000-sq.-ft. warehouse extension will almost double storage capacity. The plant formulates more than 50 agricultural chemical products—including dusts as well as liquid products.

• Planter's Chemical Corp. (Norfolk, Va.) has started building a $90,000 dust blending plant in Fayetteville, N.C. The basic insecticides will come from the firm's Norfolk plant.

•

Pharmaceuticals: Riker Laboratories, Inc. (Rexall Drug subsidiary), has broken ground for a $1.4-million headquarters and plant at Northridge, Calif. The new facility is expected to be finished by July, and will house all of Riker's operations, including research. The independently operated subsidiary now shares space at Rexall's head offices in Los Angeles.

•

Chemicals: The C. P. Hall Co. of Illinois is putting up a new office-warehouse building in Chicago. When the new structure is completed in April, Hall will use all of its present building for production of esters, plasticizers, surface-active agents and defoamers.

FOREIGN

Irradiated Fuels/Belgium: Eurochemic—the company set up last month by the 13-member Organization for European Economic Cooperation—will build a plant for processing irradiated fuels at the Nuclear Center in Mol, Belgium. At their first meeting a few weeks ago, the Eurochemic founders decided to start preliminary research immediately. The plant will cost an estimated $12 million, is slated for startup in 1961.

•

Detergents, Silica Gels/England: Joseph Crosfield & Sons (Unilever Ltd. subsidiary) has awarded a $3-million contract for design and construction of an industrial detergent and silica gels plant in Lancashire. The plant is scheduled to go onstream by July '59.

•

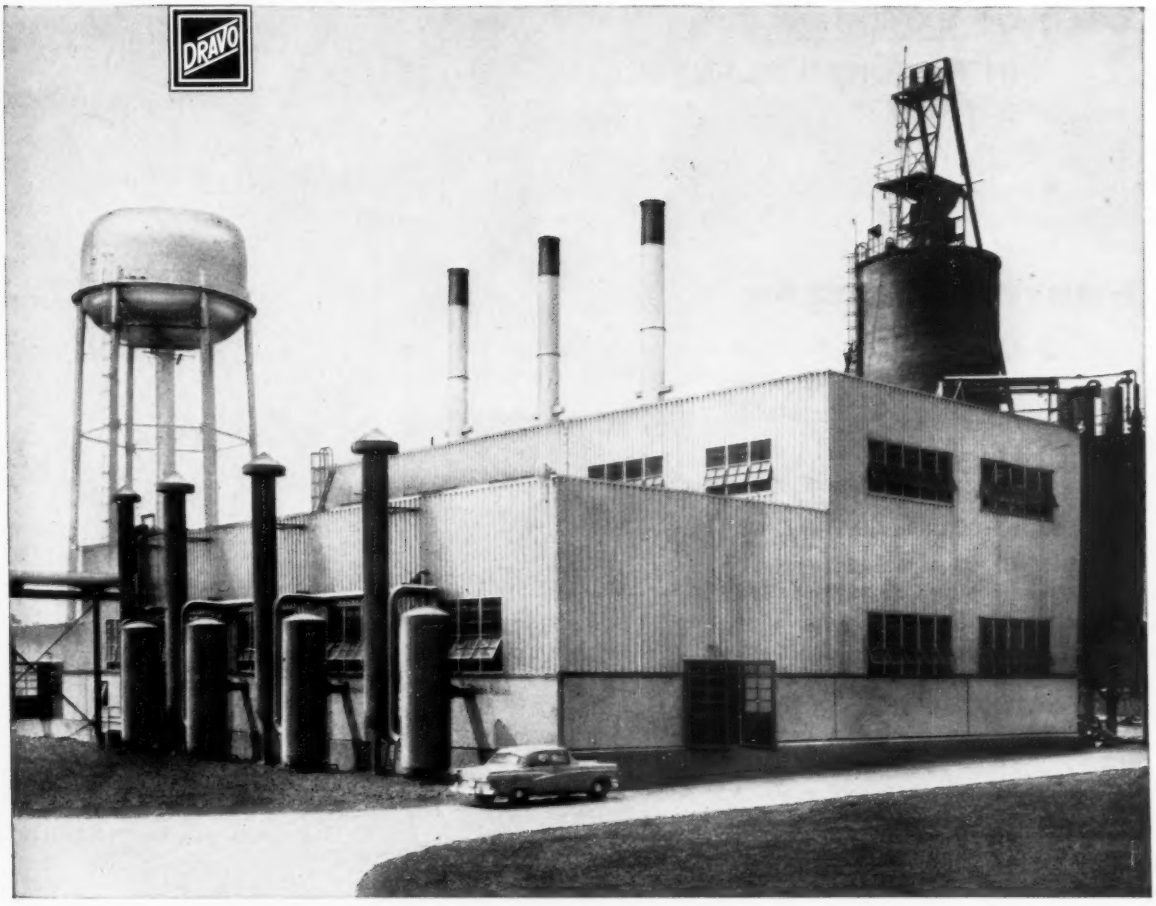
Cellulose/Egypt: Experimental production of cellulose from marshland weeds and bamboos has been successful, the Egyptian press reports. The National Research Institute in Cairo reportedly produced cellulose equal in quality to imported wood cellulose. Egypt, long on weeds but short on wood, imports several million dollars worth of cellulose annually to make rayon and paper.

•

Explosives/Australia: Nobel (Australasia) Pty. Ltd. will soon start construction of a $7-million commercial explosives plant 70 miles south of Sidney. For the past 80 years, Australia's only domestic supplier of explosives has been Nobel's other plant, near Melbourne.

•

Pharmaceuticals/India: Having outgrown its leased production laboratories, Parke, Davis will start construction by midyear of a 100,000-sq.-ft. plant in Bombay. The new plant will produce most of the pharmaceutical products Parke, Davis sells in India.



Five "turn-key" boiler plants for FORD

Five new Ford Motor Company factories will have Dravo-built steam generating and air compressor plants similar to this one in Sterling Township near Detroit. Three are in operation, the fourth and fifth are under way. First of these turnkey projects was built in 1955. Ford engineers specified design requirements . . . Dravo handled engineering-construction, procured equipment and erected the complete plant.

Dravo has built more than 80 power and steam generating plants for both industrial and central station use. The combination of pipe fabrication facilities and construction experience produces low cost plants that are economical to operate and maintain.

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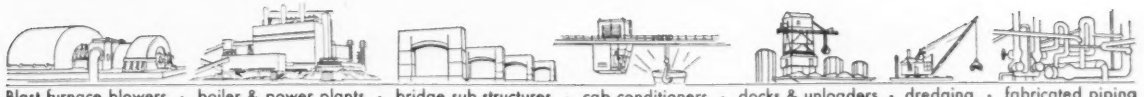

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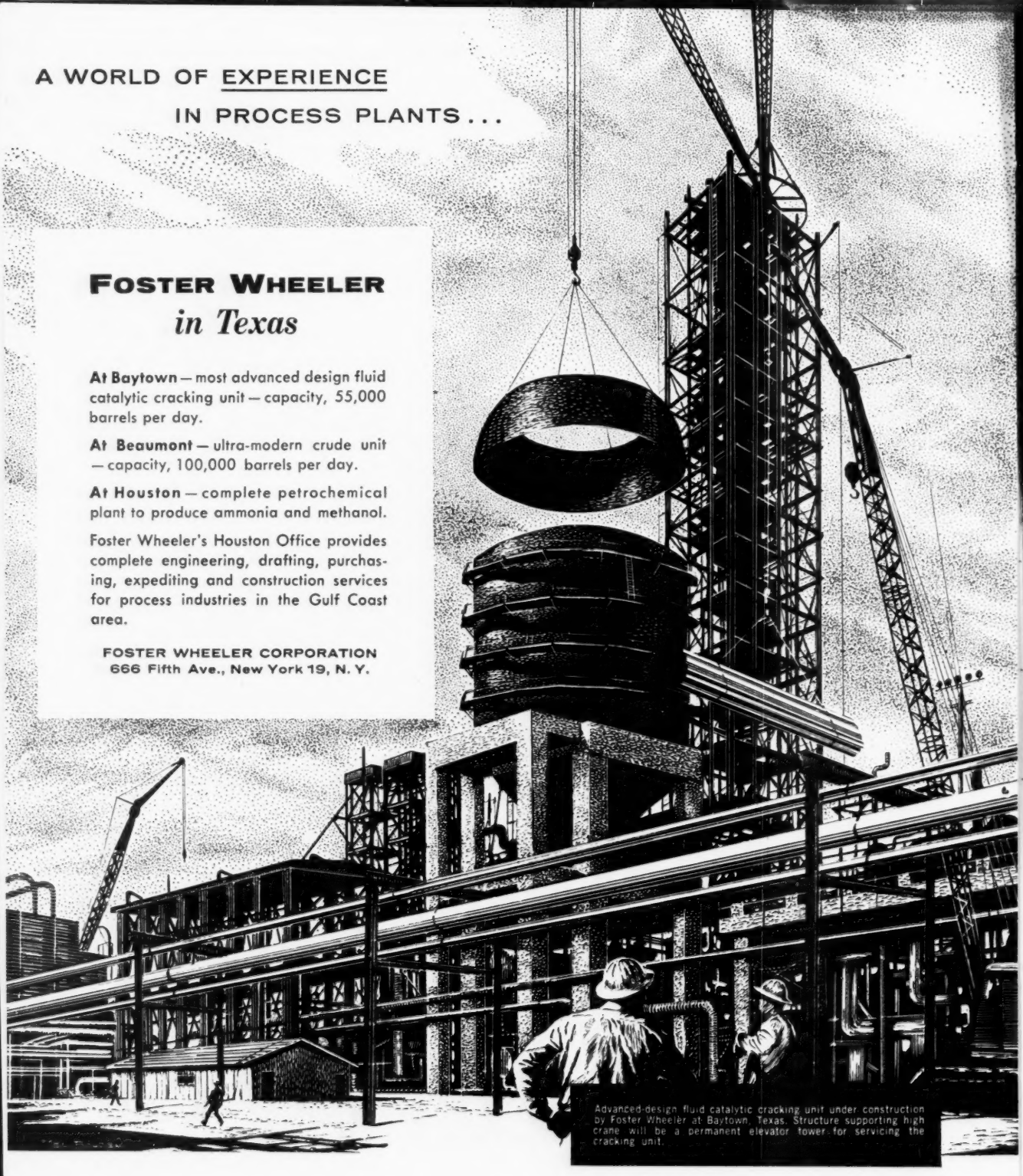


Advanced-design fluid catalytic cracking unit under construction by Foster Wheeler at Baytown, Texas. Structure supporting high crane will be a permanent elevator tower for servicing the cracking unit.

DESIGN
ENGINEERING
CONSTRUCTION

Petroleum Plants
Petrochemical Plants
Chemical Plants

NEW YORK • LONDON • PARIS • ST. CATHARINES, ONT. • TOKYO

Washington
Newsletter

CHEMICAL WEEK
February 15, 1958

The monopoly settlement against United Fruit Co. will be closely watched as a test-tube experiment in creating competition in an industry. It's a case worth careful study in the antitrust-conscious chemical process industries. Here's the story:

United Fruit voluntarily agreed to divest itself of about 35% of its banana import business, to break out of a complex monopoly suit that would have required years of expense to settle in court.

The company was given until 1970 to carry out the divestment, although it has to submit a plan by '66. Under the consent decree, it seems possible that United Fruit stockholders might wind up—at least, temporarily—owning most of the new company's stock. But the decree requires that a new competitor actually be created.

Antitrust divestment—splitting off whole chunks of a company's operations—is not new. But it doesn't often happen in the cases the government wins by court conviction. Reason: courts have found it a formidable job to split up or slice off pieces of a company.

The few divestitures won, or agreed to, in recent years have involved either small companies or unimportant segments of a company's operations. But the United Fruit divestiture involves both a major company and the heart of that company's business: growing and importing bananas.

Thus the splitup differs from the settlement of other big cases in this field—A.T.&.T.-Western Electric (where only small and relatively unimportant subsidiaries were involved) and Du Pont-General Motors (which involves only sale of stock).

•

The tranquilizer investigation that got under way in Congress this week (Feb. 11-12) is aimed at the promotional activities of firms that supply ethical drugs. Rep. John Blatnik (D., Minn.), chairman of House Government Operations Subcommittee conducting the study, doesn't see any legislation coming out of the hearings. Rather, he believes that focussing a spotlight on the practices of some drug houses will serve to end so-called "abuses."

Blatnik is critical of promotional material mailed to doctors that, he claims, tends to ballyhoo desirable qualities, minimize or disregard side effects. He isn't talking about the technical information introducing drugs—but the follow-up literature designed to sell. The "sell," according to Blatnik, tends to obscure the scientific data.

•

Congressional approval of the new advanced research projects agency doesn't resolve the fight over whether civilians or military men should control U.S. activities in outer space. ARPA will direct develop-

Washington Newsletter

(Continued)

ment of anti-ICBM defense systems and the military end of space projects. For at least a year, it will also have authority over scientific projects. Congress seems to be tending toward putting top authority over space in a civilian agency—just as it gave control over atomic energy to a civilian agency after World War II.

•

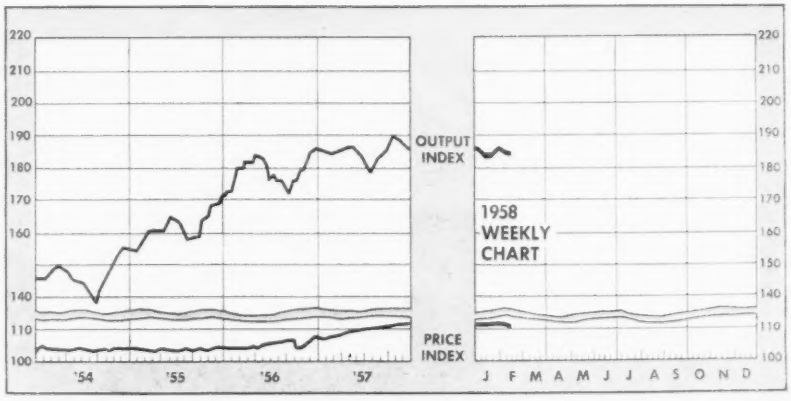
This week's unemployment figure of 4.5 million came as no surprise to government officials. They have been saying all along that jobless totals would climb steeply over December's 3.4 million.

The figures for February are expected to tell the tale. If they stay below 5 million, the Administration will assume that February will mark the high point in unemployment, and that things will begin to show an improvement in March.

If the jobless totals continue to show a marked upswing, Democrats can be expected to mount a strong push for antirecessionary measures and tax cuts to shore up purchasing power.

Government experts are reconciled to the fact that unemployment for February is expected to set a new post-World War II record, surpassing the 4.7 million previous high set in Feb. '50.

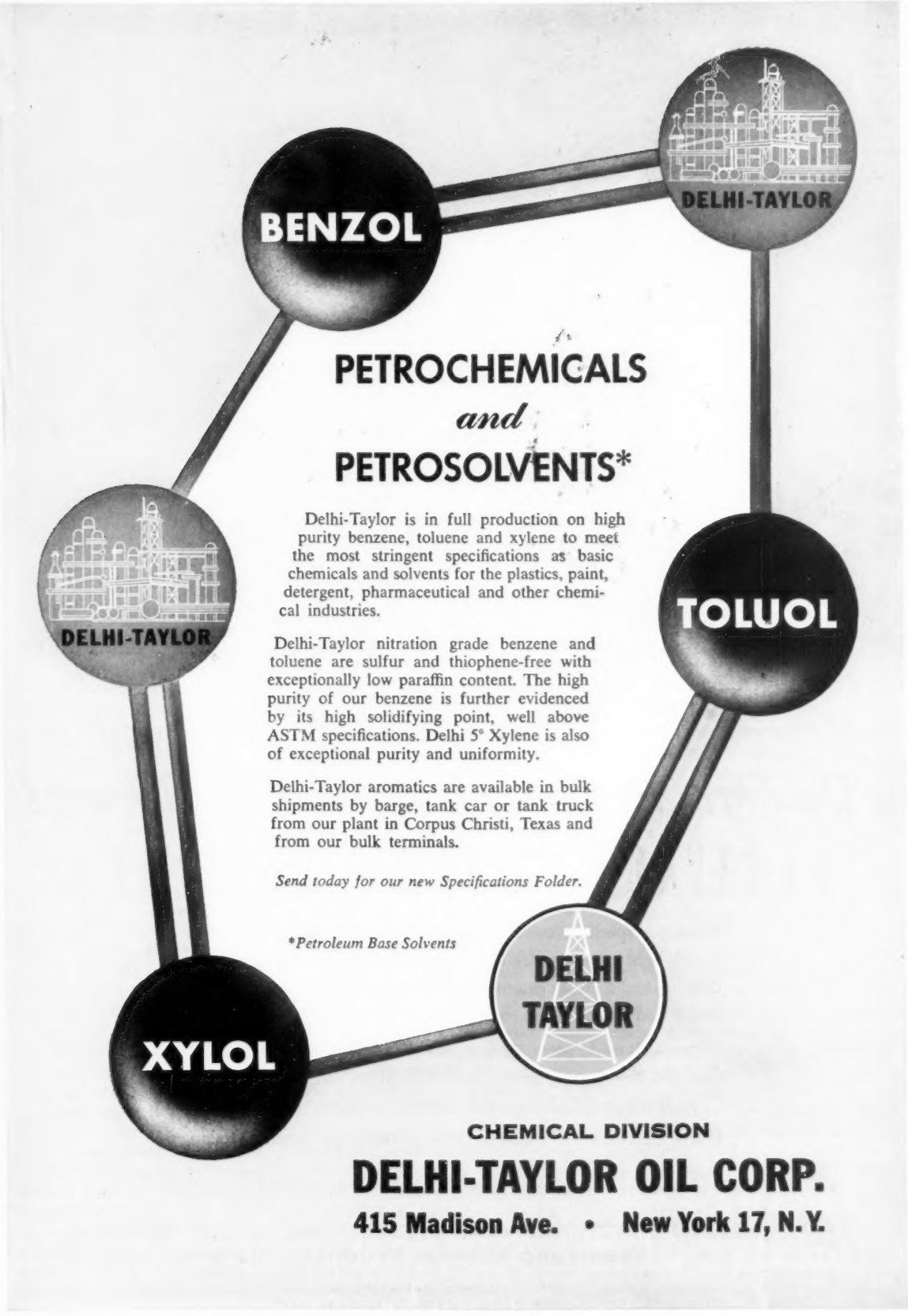
What worries the experts most is that unemployment last month hit across the board, showing up in every major segment of the economy.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	185.0	185.0	184.1
Chemical Week wholesale price index (1947=100)	110.8	110.9	108.2
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	41.43	40.97	41.44

MONTHLY Foreign Trade (million dollars)	Exports			Imports		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
Chemicals, total	115.7	117.0	86.2	20.2	23.5	25.3
Coal-tar products	7.2	8.2	5.0	2.9	5.6	6.1
Industrial chemicals	17.3	17.9	14.5	7.2	6.5	6.2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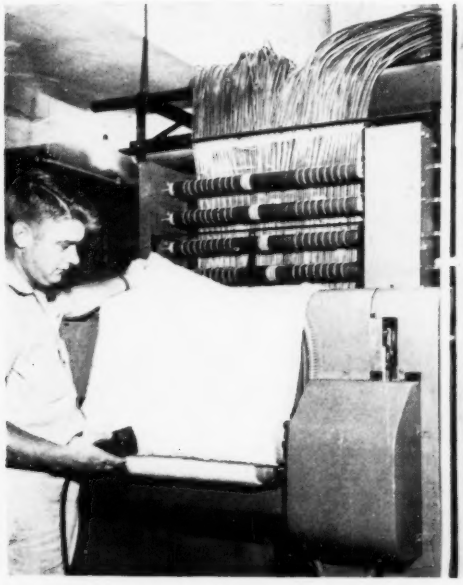
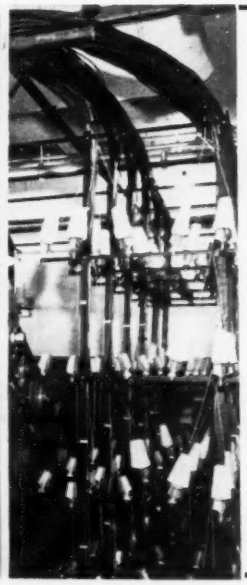




The Chemstrand Story

	1956	1957
	(million dollars)	
Net sales	107.1	146.0
Net income	12.2	20.1
Total current assets	51.7	57.3
Total assets	193.9	237.1
Total current liabilities	25.3	31.9
Total funded debt (mortgage bonds, term loan)	97.5	111.0
Total owners' investment (Monsanto, American Viscose)	66.2	86.2

Research and development play big part at Chemstrand, where success sparked first annual report.

Joint Venture Takes a Unique Step

Chemical executives and financial pundits are looking behind the scenes for the reasons why Chemstrand Corp. decided to issue its first annual report last week. The unique report contains what are believed to be the first comprehensive, certified financial statements by a jointly owned company.

Chemstrand says it is issuing the report simply because of the magnitude of Chemstrand's business as an entity and because it feels stockholders of Monsanto Chemical and American Viscose — Chemstrand's parents — should know just what stake they have in the firm.

Stockholder Relations: As a stockholder relations move, publication of the report—which shows booming business for Chemstrand—has been well received, according to *CW* interviews with management of the parent companies, with Chemstrand and with stockbrokers and chemical analysts on Wall Street. Consensus: the report represents a bold stroke in customer and stockholder relations, particularly because of the stature of Chemstrand in the business community.

Supporting this view, Chemstrand President Edward O'Neal, Jr., says the report is in response to wide public and customer interest in the company. Viscose Vice-President and Treasurer W. H. Brown points up the report's value to stockholders: "Chemstrand is very important to Viscose stockholders. We wanted to give them a complete picture of the firm's position."

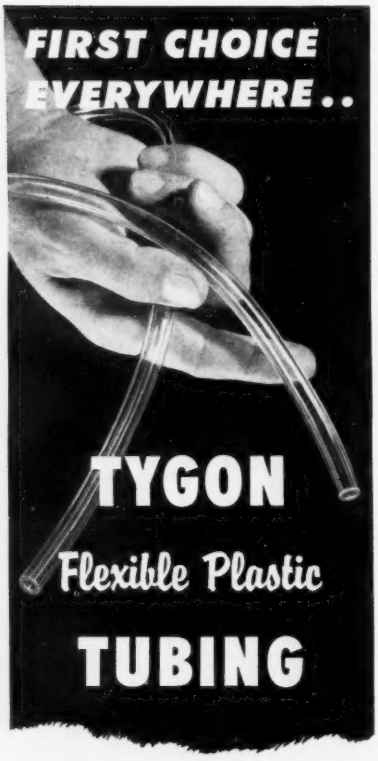
Hidden Factors: But there appears to be a bit more behind the matter of stockholder relations. To be sure, Viscose wants to give its stockholders a good look at Chemstrand, but there's a feeling among some investors that Viscose owners are increasingly interested in Chemstrand because of declining Viscose fortunes and the stockholders' inability to profit from the joint venture's earning power. The situation is further aggravated by the fact that Chemstrand's nylon cord for tires and Acrilan for carpets are in competition with Viscose products.

According to John Bohmfalk, Jr., chemical analyst in the New York stock-brokerage firm of McDonnell & Co., "Viscose needs a formula to permit it to capitalize on Chemstrand's earning power. One solution would be to have Chemstrand declare a dividend; but to do so, it would have to secure relief from a "no-dividend" restriction placed on the company by creditors for its short-term borrowings—now $20 million."

Bohmfalk adds without reservation that Chemstrand will declare a dividend for the parent companies (Monsanto and Viscose each own 50%) this year. O'Neal, Bohmfalk feels, is sympathetic to paying dividends. Bearing this out somewhat, Viscose's Brown told *CW*, "If business conditions warrant, Chemstrand will endeavor to amend its loan agreement to permit a dividend toward the end of the year."

Although publication of the report would lay solid groundwork for plans to declare a dividend, it may have other purposes as well. Among others, it may serve to put to rest trade gossip—common for a year or more—that Monsanto and Viscose are preparing to spin off their chemical-fiber-making associate and that Chemstrand is preparing to make a public offering of its own stock. On the other hand, analysts point out that publication of a report could also be groundwork for just such moves.

Needy Stockholders: Viscose's annual report issued last Friday clearly indicates the importance to stockholders of a possible payoff from Chemstrand.



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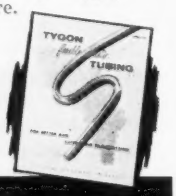

389-E

PLASTICS AND SYNTHETICS DIVISION
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ADMINISTRATION

The report shows that '57 was something less than a good year for the Philadelphia company. Net sales for the year were $227.6 million, compared with $239.4 million for '56. Net earnings last year were $8.4 million, $6.5 million below the figure for the previous year. Income before taxes was $17.3 million in '57; $32.3 million in '56. Earnings per share showed a substantial decline for '57, falling to $1.65. Earnings per share in '56 were $2.93.

However, and this is what Viscose stockholders are eyeing, when Viscose earnings per share are combined for the past two years with the firm's 50% equity in earnings of its associate companies—Chemstrand and Ketchikan Pulp Co.—the $2.08 total for '57 exceeds that of '56 by 79¢.

Chemstrand Doing Well: As the table (*p. 31*) shows, Chemstrand ended its fifth anniversary as a producing company by lifting both sales and earnings to record levels.

Sales at $146 million were 36% above the high that was set in '56, and net income of $20.1 million for '57 topped the '56 net by 66%.

Sales of the company's Acrilan acrylic fiber were up 183% over '56 sales, and Chemstrand nylon sales increased 29% last year.

Formed in May '49 for research and development, manufacture and marketing of chemical textile fibers, Chemstrand began Acrilan production at Decatur, Ala. (location of its administrative offices), in April '52. Production of nylon at the company's Pensacola, Fla., plant (reportedly the world's largest wholly integrated nylon plant) began in Nov. '53.

The nylon plant began production with an annual capacity of 50 million lbs. During the past year, expansions boosted capacity to 114 million lbs. a year. Production capacity of the Acrilan plant—originally 30 million lbs./year, is now being increased to 45 million lbs.

Chemstrand's capital outlays last year totaled $44,080,079. The expansion program begun in '56, and expected to be completed this year, will have cost the company about $120 million, the report indicates. This will have been financed chiefly by retained earnings and depreciation. Of a five-year $25-million term loan negotiated late in '56, $20 million was borrowed last year.

Foreign Moves: Chemstrand plans late this year to begin production of Acrilan at a plant now under construction at Coleraine, Northern Ireland. This plant will be operated by Chemstrand Ltd., in whose stock the parent company is investing $10 million.

In addition, Chemstrand last year licensed two foreign companies to produce acrylic fibers. Agreements were made with Societa Industrie Chemiche Edison (Milan, Italy) and Mitsubishi Rayon Co., Ltd. (Tokyo).

Under the agreement with the Italian company, Chemstrand will receive 26% of its stock with an option to purchase an additional 14%. Under agreement with Mitsubishi Rayon, Chemstrand receives 33% of its stock. Royalties based on production and sales also will be received from both companies, even though the companies will not market their fibers under the name Acrilan.

Future Looks Good: Chemstrand's O'Neal is pleased with his company's progress to date. "The acceptance of Acrilan by the trade and the consumers in a greater volume and variety of end-products during '57 was stimulating," he said.

The company reports that Acrilan—a tough competitor of Du Pont's Orlon—is being used in increasing amounts in the carpet industry. Only recently seven carpet manufacturers introduced new lines of carpets containing Acrilan, bringing to nine the total number of firms now making Acrilan carpets.

The fiber is used in manufacture of blankets and other items of bedding. It has also found acceptance in the clothing field, particularly in Acrilan jersey.

Like sales and profits, Chemstrand's operations continue to grow. In '57, the company paid $34.7 million in wages and salaries to more than 8,400 employees at Decatur and Pensacola and at sales offices in New York, Needham Heights, Mass., Charlotte, N.C., and Akron, O. Federal income tax liability accrual for the period amounted to $22 million.

O'Neal's comments on his company's future should be reassuring to stockholders of parent companies: "We're budgeting for increased sales in '58 in both nylon and Acrilan lines. . . . Consumer demand for the true chemical fibers is expected to follow during '58 the constant upward trend it has demonstrated for the past decade."

COLUMBIA-SOUTHERN CHLORINE: *matchmaker at work*

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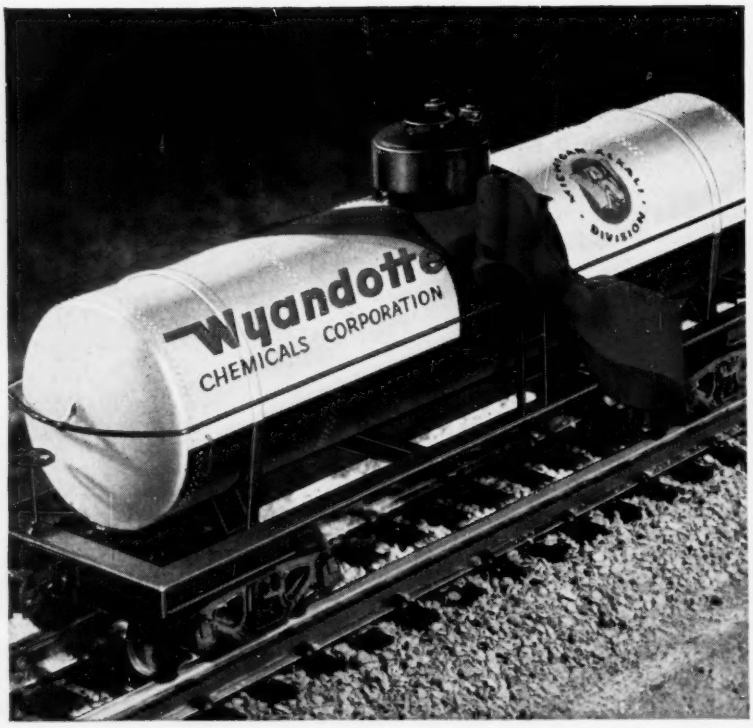

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Half a million gallons of petroleum

Rebels in Cuba

U.S. chemical processors operating in Cuba were served a grim notice last week that Cuban rebels will attack and burn industrial locations on the island as part of their compaign to dislodge President Fulgencio Batista. Their proof that they'll carry out their threats was the firing of Esso Standard Oil's Belot refinery on Jan. 28. Estimated loss was $100,000.

The threat was made by Luis Perez Rios, a leader of the labor wing of rebels led by Fidel Castro, chief Cuban insurgent. Though Rios said that American firms were not special targets, it was clear they would not be given favored treatment.

What to Do: Managements of firms operating there doubt there's much that can be done to protect investments, other than sharpening up normal security measures. As one firm put it, "You can't lay off a whole bunch of people to uncover one saboteur." Moreover, several said they weren't too worried by the threat. W. R. Grace, for example, says it isn't planning to increase its guard measures beyond the current 24-hour vigil.

The rebels haven't carried out their threats very forcibly in the past, but they may be planning some drastic action. And damage to U.S. firms' investments there could be fairly exten-

UNITED PRESS

products blaze at Esso refinery as . . .

Strike Industry

sive. Though figures aren't readily available, it's known that several firms will spend about $180 million building chemical processing facilities in Cuba. Among them: Owens-Illinois Glass, Freeport Sulphur, W. R. Grace, Esso, The Texas Co., Shell Oil.

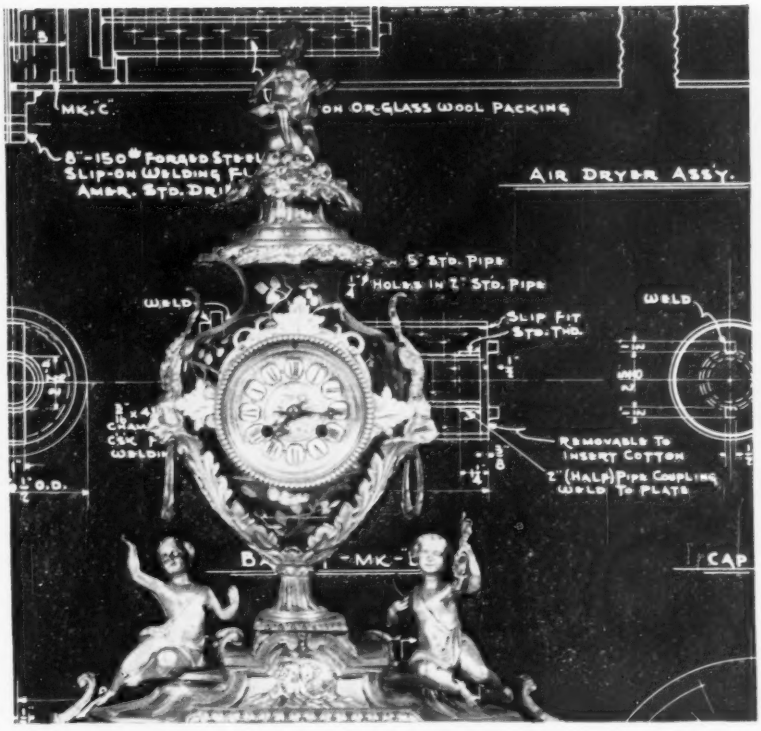
At the moment, worries over rebel destruction aren't strong. In all probability, much of the sabotage will be aimed directly toward domestic sugar processing mills.

LABOR

Pulp Settlement: Striking pulp- and paperworkers in British Columbia, Can., have settled their dispute with nine pulp and paper firms. The strike began last November; talks were resumed recently. (*CW, Feb. 8, p. 50*).

Settlement terms: a general 7½% wage increase, retroactive to last July 1, with a 2% additional hike for the year beginning July 1, '58; three weeks' vacation after 10 years' service, effective May, '58; three weeks' vacation after five years, effective May 1, '59; pay hikes for selected groups; and specifications for handling seniority disputes and holiday work.

The wage increases, including the back pay, amount to an average hike of 8½% for the two years.



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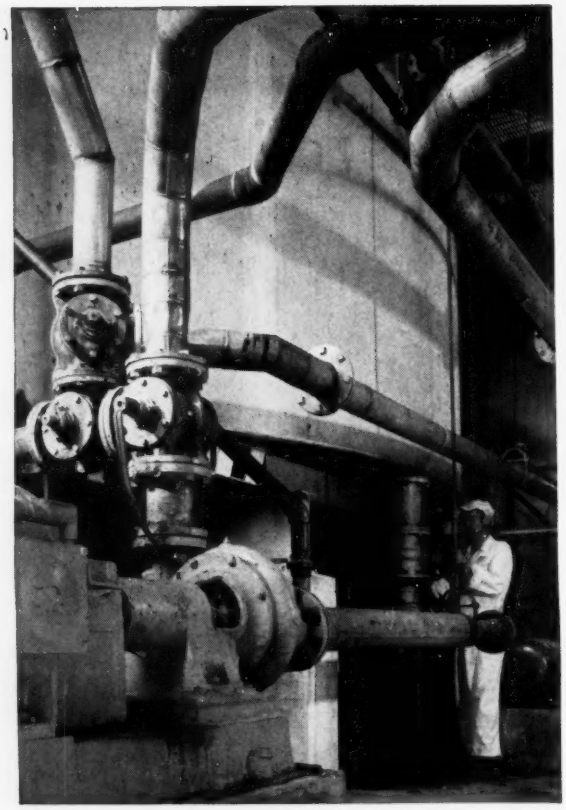

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ADMINISTRATION

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Spotlight on Food Additives: For food chemical manufacturers, '58 promises to be a year full of local, state and federal investigations, legislation and possible litigations affecting their products.

Last week, the bandwagon was already rolling. Wyoming's State Board of Agriculture was considering a proposal to ban use of chemical additives to prevent spoilage of meat and fowl.

Objections to use of such additives —on a familiar theme—came from Otto Engendorff, deputy commissioner of agriculture. "The objection," he said, "is that a human body receiving the chemicals builds up an immunity to them. If a person receives antibiotics later, during medical treatment, he would not be benefited."

And in New York City next Wednesday, the Board of Health will receive recommendations for proposed legislation regulating chemical additives in food and providing for precautionary labeling of household chemicals. The proposal would put the burden on manufacturers to show that a chemical is harmless.

Federal action along the same lines will resume March 10 when the Food & Drug Administration holds a public hearing to determine if certain synthetic colorings for foods should be tested and certified by FDA as harmless. A prehearing conference will be held Feb. 20.

KEY CHANGES

David K. Wilson and **Oliver Russell Grace,** to directors, Virginia-Carolina Chemical Corp. (Richmond, Va.).

L. P. Moore, to president, North American Cyanamid Ltd. (Toronto, Can.), wholly owned subsidiary of American Cyanamid Co.

Harry T. Marks, to president, Ferro Corp. (Cleveland).

H. Wesley Hibbert, to president; and **Laurence Bowen, Jr.,** to executive vice-president; Pecora, Inc. (Philadelphia), calking compounds and tile adhesive manufacturer.

Russell D. L. Wirth, Sr., to director, Lakeside Laboratories (Milwaukee).

Kenneth H. Klipstein and **George R. Martin,** to executive vice-presidents, American Cyanamid Co.

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Moreover, this versatile oxidant has proved superior in the production of amine oxides, sulfones, metal salts, etc. Becco Peracetic Acid is also widely used as a bleaching agent, as a germicide, and as a polymerization catalyst.

The essential points to remember are these: If you are currently using Peracetic Acid, rely on Becco as *the* source for the *high-purity* product. If you are not now using Peracetic, but would like to investigate its use in epoxidation reactions (or the use of H_2O_2, for that matter), Becco research will work with you—and there's no obligation on your part. Feel free to consult us.

In the meantime, you will find the following bulletins of interest—they're free at your request:

BULLETIN No. 4 – Peracetic Acid 40%

BULLETIN No. 69 – Epoxidation and Hydroxylation with Becco Hydrogen Peroxide and Peracetic Acid.

Progress in Peroxygens

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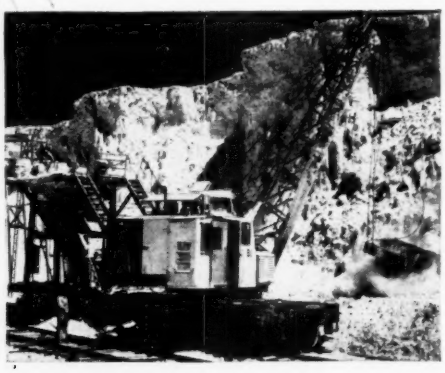

This combination of Boron as the active oxidizable ingredient and hydrogen peroxide as the powerful oxidizing agent is proving to be one of the most powerful propellent fuels yet developed. The mixture is called BORANE.

Both Boranes and Hydrogen Peroxide owe their existence to Sulphuric Acid, the important reaction chemical in changing borax into boric acid from which the Boranes are derived. Sulphuric Acid also is the starting point in the production of hydrogen peroxide.

It is difficult to find any commodity stemming from chemicals, either organic or inorganic, that doesn't meet up with Sulphur or a derivative somewhere along the line. Quite often the Sulphur radical appears in the chemical structure of the commodity itself. Many, many times it plays an important role in the production of the headline product . . . just as in the case of the BORANES.

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Hairspray makers will try to get the shy pioneer into the open.

Breaking Barriers to Male Hairspray Sales

Rexall Drug's recent introduction of an aerosol hairspray for men may be the strongest shot in a new assault by the cosmetics industry against a hitherto impregnable male buying area. The new Rexall product, Stag Perfect Hair Groom, sells for 98¢ for 5 oz. And, offered for the past month in 10,000 franchised stores, it is selling well, without heavy promotion. Rexall's big merchandising and promotion push for the novel item will come in April.

But, by that time, Rexall may have company. Charles Antell is test-marketing a new aerosol hair dressing for men, and could easily switch to a hairspray. In fact, the company has had a hairspray for men for over a year, but it never got off the ground. Success of the Rexall product might stimulate Antell to renew its sales efforts for the spray.

More in the Wings: Elizabeth Arden also will watch Rexall's progress closely. It has been selling a hairspray for men for about six months. "Acceptance in 1,000 stores," company officials told *CW*, "has been quite fair despite its limited promotional campaign."

Another potential manufacturer is Chesebrough-Pond's, which already markets the highly successful Vaseline Hair Tonic.

Carter Products, Inc., has also tried a hairspray for men called Crew. But Carter President, H. H. Hoyt, told *CW* that Crew hadn't done well in test markets. He blamed this on technical rather than promotional problems.

But it's the promotional problems that most cosmetics makers cite when you ask them why men's hairsprays haven't yet taken hold. Said one large cosmetics company vice-president: "There's no need for a fixative for men. If we thought there was, we'd have one on the market. Women's hair requires more effort to hold it in place. Gravity holds a man's hair down. If we can sell a man a hairspray, we can sell him lipstick and powder, too."

Said a cosmetics company sales manager: "Men think it's silly to spray stuff on their hair." Another sales manager said: "Some men use their wives' hairsprays but that doesn't mean that a man's hairspray would go over on its own."

Afraid to Buy? Putting a man's hairspray over successfully could bring some substantial sales receipts. Of the $1.6 billion spent in the U.S. for cosmetics in '56, almost one-half billion went for men's shaving equipment and hair tonics ($108,280,000 for shaving preparations; $283,460,000 for shaving accessories, $60 million for hair tonics).

The potential market for an aerosol hairspray for men? Those who venture a guess peg it at about $6

million in the first year. H. R. Shepard, president of Aerosol Techniques, set the maximum potential at around $30 million/year. A Du Pont spokesman suggested $45-million sales by '62, if it caught on.

These estimates were all hedged with "if it wins acceptance"—an important factor. There's no real parallel between the rocketing success of the women's spray and its counterpart for males. Women's hairspray was an entirely new and needed product. A man's hairspray* competes with already existing products that have wide acceptance. To succeed, sprays must win preference over older products, say market researchers, because men are not going to buy two separate hair grooming products.

Convincing them to make the switch will be an expensive operation, advertising will likely cost 50% of gross sales, according to one company official. And most market researchers think that test marketing of a man's hairspray is futile. By isolating the marketing of the product, they say, the companies doing the test marketing are defeating what should be their main purpose. "Get across the idea that 'everyone else is using it, so it's not going to make you look too odd.' "

Who'll Plunge First? This being the case, the fate of men's hairsprays won't be known for sure until a big company, able to put big money behind an all-out drive, comes out with a product.

The companies in the best position to swing a large-scale advertising campaign with a strong masculine appeal are obviously Mennen and Gillette. Both firms told *CW* they have looked at the idea, but neither admits to having a product ready to come out.

Most intriguing trade talk concerns Revlon. Though Revlon isn't commenting, its new line of men's products will probably include a hairspray. Bristol-Myers, maker of Vitalis, and also not talking, might go to aerosols too.

Nobody will say whether hairsprays for men have a future in the U.S., but almost all cosmetics makers agree that this will be the year they will find out.

*A man's product usually contains more lanolin or other modifiers and less stiffening agent (polyvinylpyrrolidone) than women's hairsprays.

Reinforced Plastics' Effect on Wood

The theory:	*Mark's comments:*
Reinforced plastic coating promotes decay by . . .	
(1) Preventing the wood from breathing. This induces "dry rot."	Disproved.
(2) Allowing water to enter the wood, setting up conditions under which fungi thrive.	Disproved.
Reinforced plastic coating prevents decay by . . .	
(3) Excluding water. If the water penetrates, however, the wood will rot.	Not substantiated by evidence.
(4) Excluding air, preventing normal metabolism of the fungi.	Possibly correct.
(5) Killing the fungi upon lamination, excluding them thereafter.	**Most likely explanation.**

New Job Ahead for Plastics?

The five theories above have been advanced to explain exactly what happens to wood coated with a reinforced plastic. But there's been a notable lack of hard information to support any of them. Last week, however, at the Chicago conference on reinforced plastics sponsored by the Society of the Plastics Industry, two investigators revealed their research on the subject. Their conclusion: kiln-dried wood will not rot when completely encased in reinforced polyester or epoxy resins. It's a conclusion that could have far-reaching ramifications for the chemical process industries.

The two researchers, Richard Mark, timber engineer with Balsa Ecuador Lumber (New York City), and Bert Zuckerman, consultant in wood pathology (Mattapoisett, Mass.), confined their studies to coatings on balsa wood. But they feel the conclusions are applicable to any type of wood. In fact, one reason why they chose balsa is because it contains no extractives that could have imparted decay-resistance to the test samples.

Provided further work bears out these researchers' data, reinforced plastics could find some new jobs, some of them in competition with chemical treatments of wood. Among the possibilities:

- Marine pilings. It has been estimated that marine borers do $50 million worth of damage every year in his country (*CW, June 8, '57, p. 72*). But they've never been known to attack the hulls of reinforced plastic boats. On the basis of that, as well as the Mark-Zuckerman findings, some plastic-coated pilings are under test.
- Orchard and ornamental trees. When these trees are pruned, the cut might be sealed with a polyester resin, protecting them from decay.
- Construction panels. Mark and Zuckerman see their results as making attractive the construction of entire building sidings with reinforced plastic-coated wood. They also envision the construction of bigger wooden-plastic boats.

Forging Forward: Right now, a considerable amount of reinforced plastic construction, of course, employs wooden cores (primarily to obtain rigidity). Mark and Zuckerman point out that 40% of the boats made last year (exclusive of government boats) were plastic. And 75% of them used wood cores of some type. But as they see it, there has been a question

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about coated wood's ability to withstand decay. Such a question is of more than casual interest to Balsa Ecuador, which supplies wood for many of these applications.

So the firm asked Mark and Zuckerman to find the answer. The pair made tests on coated and uncoated wood exposed to fungi under conditions favorable to decay. They also exposed virile fungal cultures to ingredients and combinations of ingredients of common polyester and epoxy formulations. These tests convinced them that kiln-dried wood will not decay under the coating as long as it is completely encased.

It is doubtful that these tests will be the last word on the subject. Mark, for one, expects the report will stir up some controversy.

In the final analysis, of course, the future of the coatings for protective duty must be judged on the economies of application, too. Mark feels the costs will be comparable to that of conventional chemical-pressure methods. Devices such as Rand Development's spraying-gun (*CW, Jan. 25, p. 42*) might help bring the application costs down. And if Mark and Zuckerman are right, reinforced plastics are in for a busy future.

Researcher Mark: His work may open new doors for plastics.

IN

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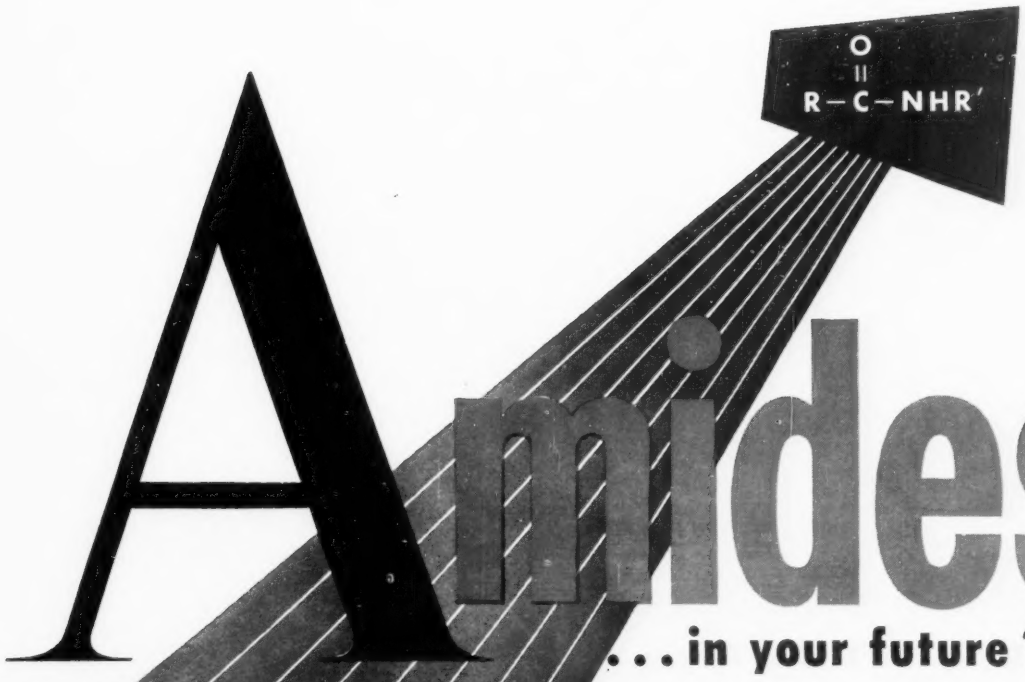

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In the Jade Room of New York's Waldorf-Astoria, General Mills' Harold Wittcoff tells researcher guests

Road-Show Seminars Update Res

Back in his lab this week, Research Director Harold Wittcoff (above) of General Mills' chemical division (Kankakee, Ill.) and his colleagues are adding up preliminary results of a hectic, four-city tour that combined the dissimilar elements of research and salesmanship.

Designed to scare up new uses for GM's Versamids (the company's trademarked polyamide resins), the tour also gave Wittcoff's team ideas on how to apply older resins to new jobs. In four cities—Philadelphia, New York, Boston and Chicago—the GM technical and sales staffers met with over a thousand industrial researchers, passed along the message that research is qualifying Versamids for new uses in coatings, adhesives and plastics.

Although Versamids have been offered commercially since 1948, new ones are constantly under development. And because the resins are condensation products of polycarboxylic acids and polyamines, there are plenty of possibilities for their chemical make-up. All this variety means, however, that GM must continually apprise other researchers of its newest products.

Moreover, GM must keep its own research teams alert to special jobs that might require new resins, and jobs that might broaden uses of older Versamids.

Resins to Sell: The GM researchers started with several new resins. One was XD-140, a polyamide that features low viscosity. Still undergoing toxicity tests (and not yet "officially" a Versamid), it looks like a good bet in solventless coatings, potting and encapsulating compounds, and in plastics for tools.

Wittcoff and his colleagues pointed out that, like other resins of its type, XD-140 looks good in combination with epoxy resins. But other Versamids have nailed a big market in epoxy combinations, and General Mills is now looking at combinations involving isocyanates, urea and phenolics.

Paint and coatings makers were prime targets of research presentations on combinations of Versamid 100 and Hypalon (Du Pont's chlorinated, chlorosul-

bout the novel properties of Hypalon-Versamid coatings. The talk was part of four-city GM tour.

earchers on Polyamide Progress

fonated polyethylene). Hypalon (which is characterized by high ozone resistance) is normally cured with lead oxide and an organic acid such as rosin. But the lead-containing films are hazy when unpigmented. A better vulcanizing agent, GM thinks, is its Versamid—20 or 25 parts of it per 100 parts of Hypalon.

The resulting, lead-free films are clear when unpigmented. The films are sufficiently strong for coating purposes, have high elongation, good light stability, good abrasion resistance, and (because of the Versamid) improved adhesion to steel and such materials as GR-S rubber.

Versamids are working out well, too, in thermoset adhesive compounds, GM told development staffs in the four cities. Most of the formulation research concerns application to specific surfaces. Main points of the GM researchers' data: Versamids adhere to aluminum, steel, brass and other metals, plastics, wood and masonry; they are nontoxic; and an excess or deficiency of Versamid used as a curing agent does not have a serious adverse effect on the physical properties of the adhesive. And, as a bonus, GM says the Versamid-containing adhesives stop corrosion.

Solders to Sell: GM has developed a Versamid-based "solder" for metals, and revealed some formulation twists at the seminars. Fillers must be chosen with care—for example, iron and aluminum are unsuitable because they react with water to form hydrogen, which causes the solder to foam.

Gases adsorbed on fillers such as carbon black, silica, metal powders, etc., may also cause trouble. So GM told its guests that the volatiles should be removed, either by heating or, if practical, by "squeezing" the fillers in milling equipment.

Versamids also figure in numerous solvent-based adhesives and paper, film and foil coatings. GM developed a special electricity-conducting coating; used it in its own plant to discharge static electricity on the polyethylene ducts used to transport flour and wheat products from one of its flour mills to another.

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RESEARCH

The firm is also working on lower-cost fire-retardant coatings based on Versamids. GM has been particularly successful in finding a market for Versamids in flexographic inks. The polyamides help the inks adhere strongly to paper, metal foil and plastic film, also contribute gloss and resistance to grease, water and detergents.

GM makes no inks, but does reveal that a typical ink formula contains Versamid 930 or 940 (30%), a solvent such as isopropanol (55%), and pigment (15%).

Seminar-goers got these and a lot more pointers in using Versamids. Now, GM hopes they'll do some applications research of their own, thereby open up new markets for its versatile polyamides.

EXPANSION

• Hagan Chemicals and Controls (Pittsburgh) has combined its chemical research and product development facilities into a single department, plans increased research in household products, commercial detergents and industrial chemicals.

• Wisconsin Alumni Research Foundation (Madison) has installed two new labs to extend its research in bacteriology, food technology.

PRODUCTS

Biochemical Acid: DL-thioctic acid of high purity (98.5%) is now available at $10/gm. from K&K Laboratories Inc. (Long Island City, N.Y.).

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Radiochemical Calmer: Deanol (2-dimethylaminoethanol) now offered by Tracerlab Inc. (Waltham, Mass.), is reportedly an effective nontoxic brain stimulant, may also calm anxieties. Minimum order: $50/50 microcuries.

•

Peroxide Entry: Wallace & Tiernan Inc. (Geneseo, N.Y.) is now producing acetyl peroxide under license from Food Machinery and Chemical Corp., will sell the peroxide as a 25% solution in dimethyl phthalate.

•

Alkyl Boric Acids: Callery Chemical Co. (Pittsburgh) is out with research quantities of chloropropyl-, nonyl- and dodecyldihydroxyborane. They're potentially useful as bacteriostats, fungistats, gasoline additives.

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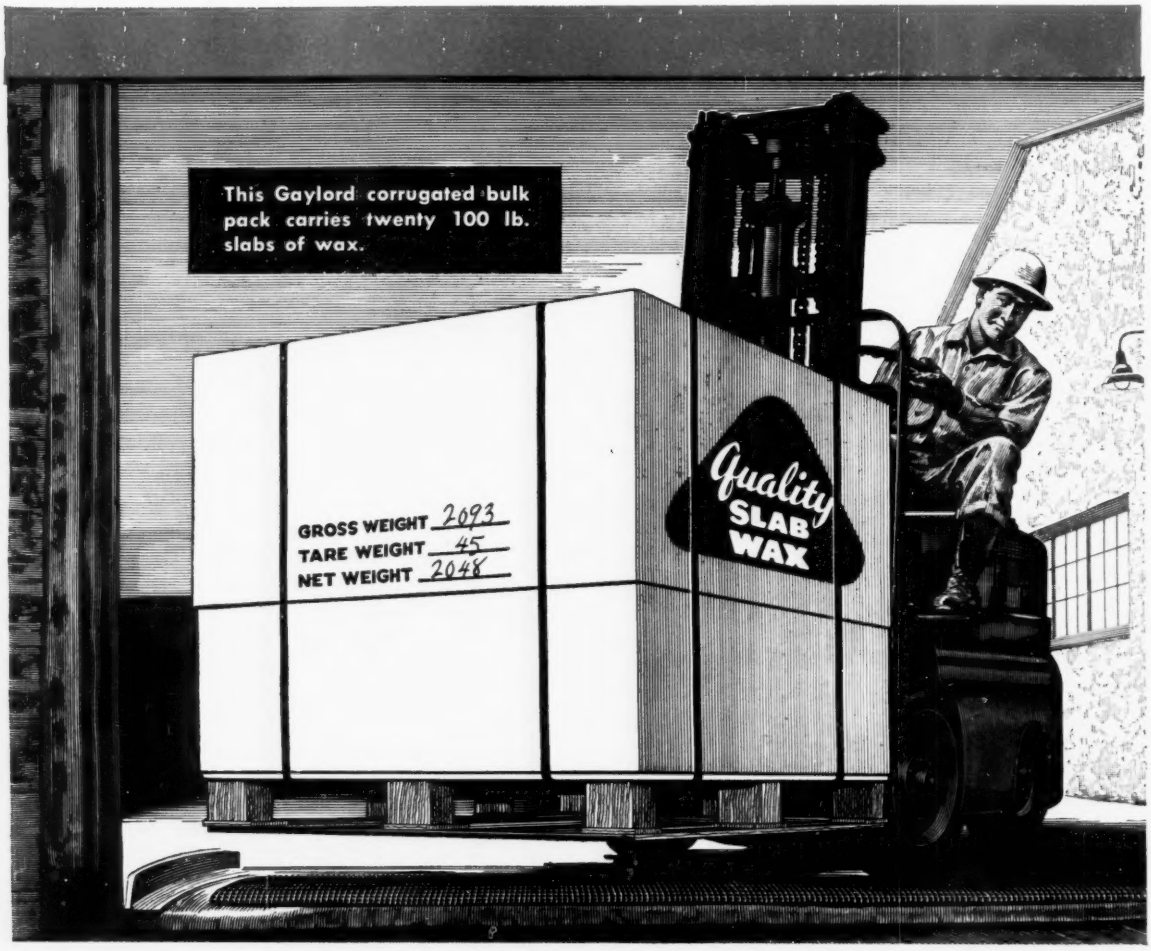
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173

CIL maintenance studies find that a 10-man crew . . .

operating with 100% effectiveness could complete a job in ..... 4 hours

under ordinary conditions, actually completes job in ..... 10 hours

But, using trained planners to map the job:

. . . after one month, crew completes job in ..... 9 hours

. . . after 6-8 months, crew completes job in ..... 6¼ hours

. . . after 18-24 months, crew completes job in ..... 5 hours

Job Planning Halves Maintenance Time

Most firms have always had some sort of planned maintenance program to combat increasing labor and material costs, and for keeping process downtime to a minimum (CW, June 29, '57, p. 84). But this week, they have the rare opportunity to compare effectiveness of their maintenance programs with that of a program of Canadian Industries Ltd.

Typical maintenance improvements, resulting from the program (*above*), show why it has been enthusiastically adopted by about half of CIL's 19 plants in the 3½ years since it was first tried. Most of CIL's remaining plants are now giving it serious study. And, the program is slated for star billing at the company's annual maintenance conference in Toronto in April.

Key to the program is the preplanning of maintenance jobs down to the smallest possible detail. This planning provides the worker with a complete step-by-step rundown of job operations, a list of the materials, tools and equipment needed and the safety precautions to be observed. Also included: the amount of time required for the job.

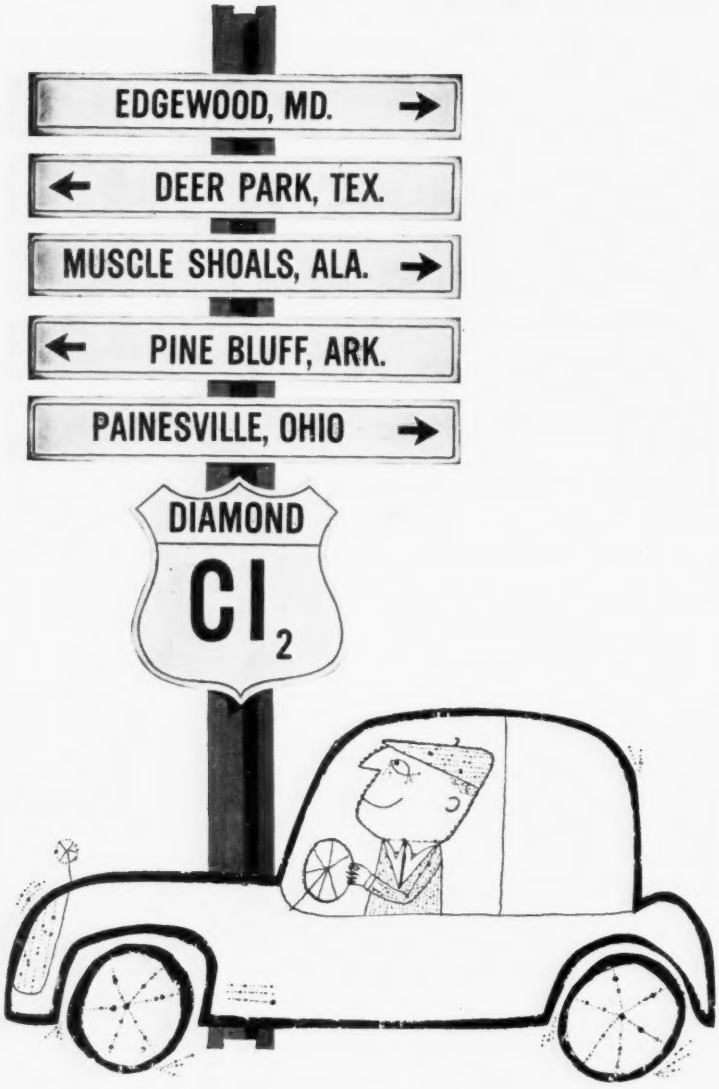
Working Smarter, Not Harder: The program is aimed at maximum utilization of labor. But it is not an incentive plan. The men are not asked to work either harder or faster. Says Gordon Gallagher, maintenance specialist in CIL's engineering department: "After all, the average tradesman takes a certain pride in his work and he does not like work blockages. He simply does a better job when the work is laid out better for him."

"Planning is nothing more than applied common sense," says Les Mustill, another of CIL's maintenance specialists, in outlining the program. "It involves advising all concerned of what we wish to achieve, how the job is to be done, how long it should take to do it, and making sure that all job obstacles and interruptions are avoided. It is simply a way of working smarter instead of harder."

The man who goes out to do a job knows exactly what he is supposed to do, isn't irritated by little things—e.g., waiting for materials, a needed tool—that can upset a job schedule. Even transportation to and from the job is often laid out for him.

Little Things Add Up: In cases where CIL's new planning program hasn't been installed, jobs often take two to four times as long to perform as time-study data would indicate—or as CIL terms it, the effectiveness of plant maintenance is about 25-45%. And, according to other firms that have made maintenance effectiveness studies, these figures "are not at all surprising."

But where the maintenance jobs are carefully planned, work efficiency climbs. As the planner (or analyst, as he's termed at some CIL plants) puts the new procedure into operation, and as he gains experience, he can in-



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crease effectiveness by about two-thirds in half a year, and double effectiveness in 18-24 months.

And while he is improving the effectiveness of maintenance operations, the analyst is also able to increase the number of operations he is able to plan well—he can handle jobs for about 10 men after six or eight months of planning experience, and for about 15 men after 18-24 months.

Gauging Effectiveness: The company sets up its standards for gauging job effectiveness like this: Before the planning program has been instituted, all the operations of a large number of maintenance jobs at the plant are carefully time-checked over a period of a year. The actual time it takes to do a job, compared with estimated time computed from basic time data values of the component parts of the job, determines the effectiveness.

Basic time data values are determined by multiple time study on a number of craftsmen. For example, it has been determined that hand-tool drilling of a ⅛-in. diameter hole to a depth of ⅛ in. in stainless steel should take 1.43 minutes. And, factors for fatigue, coffee breaks, washup time are added in when the estimated time is computed.

Picking a Planner: When the first CIL plant decided to install a planning program, it was soon obvious that the foreman was not the man for the job. Most foremen were already spending less time than desirable in the field. At one plant, for example, foremen typically spent 25% of their time estimating and planning maintenance jobs, and efforts were inadequate.

Even after being relieved of planning, foremen are often still forced to spend 50% of their time in the office, handling the increased personnel paper work caused by today's larger crews, recent study at one CIL plant showed. It was clear that it would be unwise to train foremen as analysts, and keep them from the field. There, as Mustill says, "they can use their broad experience and leadership qualities in carrying out their prime functions—crew leadership, regulation, training, evaluation, and observance of the labor agreement."

From the Crew: CIL decided to take one of the better tradesmen from each of the trade groups, train him for the planner's job. The first planner training course ran roughly eight

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weeks. One week each was spent on planned maintenance and maintenance control procedures, time study appreciation, and use of basic time data. Two weeks were spent on methods study appreciation and three weeks on practice planning exercises.

As efficiency of the training program improved, courses have been cut to four to six weeks, depending on the background of the individual.

The planner-analysts are transferred from payroll to staff assignments, work directly for the maintenance control supervisor. Both report directly to the plant engineer. But the foreman still has the final say on each maintenance job. The planner's function is to delve into the "how" of the job, as a righthand man to the foreman. He simply gathers the facts, passes them on for decision.

And, it's common for the foreman and planner to come up with new methods for a job that will reduce man-hours required to complete the work. The planner usually maps out four or five jobs, then discusses them with the foreman. It's a team effort. Even veteran foremen—skeptical at first—admit after the program has been in operation for a time that they "wouldn't be without it."

Step by Step: Here's the way the planning program operates: When a planner gets a work order from the maintenance clerk, the planner's first act is to question the necessity of doing the job. Usually his knowledge of coming events enables him to recommend to the foreman cancellation or postponement of a job or to arrange for two or three jobs to be done in combination. This avoids repetition, saves travelling time.

Then, he arranges to meet with production foreman and operator to find out why and how the equipment stopped, determine what is to be done and how many men are needed for the job. He is also able to determine whether emergency action is needed.

The planner's next step is to determine the methods of carrying out the work—e.g., prepare a step-by-step breakdown or sequence sheet. He then obtains the foreman's approval of the work methods.

Finally, a summary sheet is prepared, summarizing all the information, including safety precautions for the tradesman. Often sketches and photographs add to conciseness of job in-

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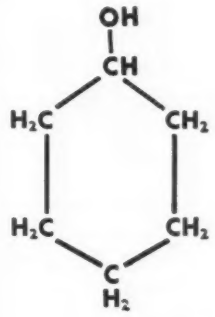

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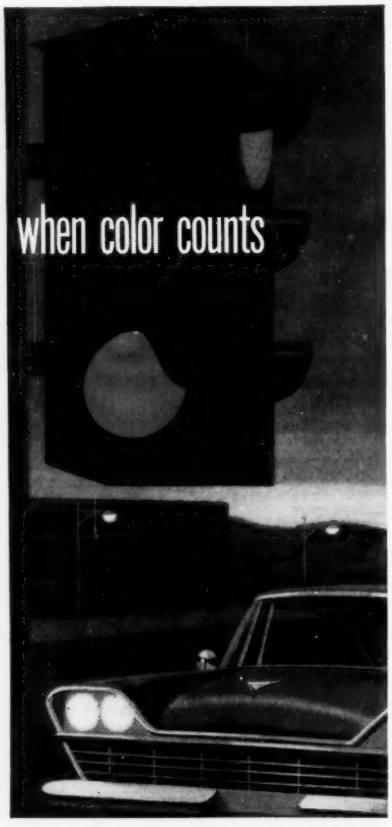

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structions. After management approval, the job is performed and the tradesman notes any changes in job content on the summary sheet.

Fast Payoff: Planners are not usually replaced on the crew from which they have been recruited. For example, if one belonged to a crew of 10 men working at 40% effectiveness, his efforts have only to result in a 4½% improvement if the output of the remaining nine-man crew is to remain unchanged. This increase can be expected within the first month of planning, according to Mustill.

CIL's goal is to develop a budget system using basic time data that will provide plant management with accurate data for predicting and controlling maintenance costs. Increased use of all phases of its planning programs are the firm's tools. From the results achieved thus far through planning, CIL appears well on the way toward that goal.

EQUIPMENT

Electronic Converter: A new high-speed electronic voltage-to-digital converter, called Model B-617 DATRAC, is offered by Epsco, Inc. (Boston). The new unit converts input voltages into four binary-coded decimal digits with an extreme accuracy at a rate of more than 3,700 conversions/second. Uses include data logging, data processing, process control and computer linkage applications. Unit is available on short delivery. Price: $9,500.

•

Process Water Coolers: Baltimore Aircoil Co. (Baltimore) is out with a new line of coolers for closed-systems where control of process-water temperatures is critical. The firm says the coolers will save up to 95% of cooling water used. Three styles are offered: centrifugal-fan draw-through units for indoor installation where floor space is limited; centrifugal-fan blow-through units with dry-fan operation for prolonging life; and propeller-fan blow-through units for use where minimum horsepower is desired.

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Air-Powered Pump: Gray Co. (Minneapolis) is offering a new lightweight air-powered pump for delivery of liquids from original shipping containers. Called the Graco Powerflo pump, it features a stainless-steel lower assembly that may be removed from

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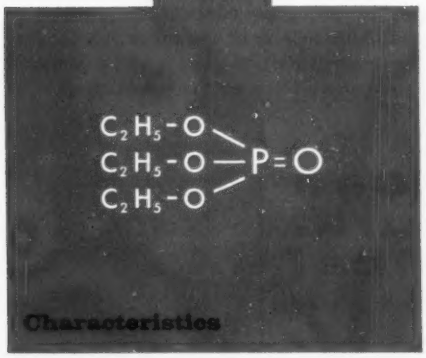

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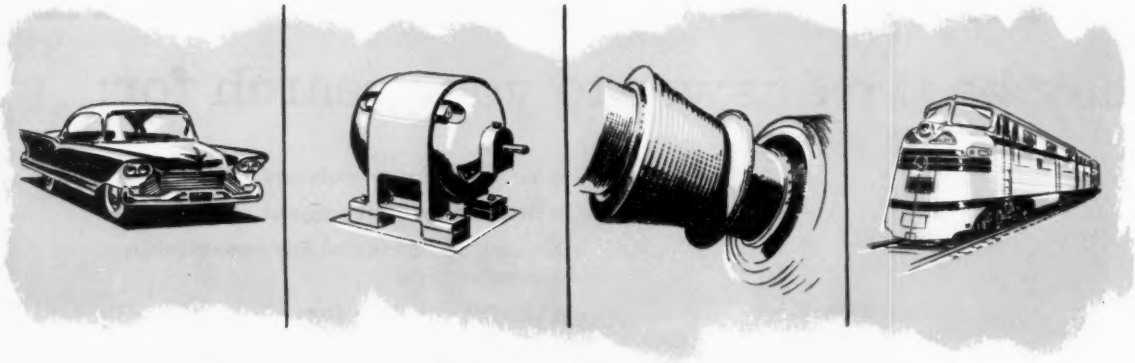
(Source: The Petroleum Engineer, March, 1956, article by C. J. Boner, "Addition Agents for Lubricants.")



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WIDELY used by leading petroleum companies in making oxidation and corrosion inhibitors for lubricants, AA Quality Phosphorus Pentasulphide assures highest standards of quality and uniformity. It is made under rigid quality control from 99.9% pure Elemental Phosphorus . . . a product of our own electro-thermal process plant and our own ample reserves of phosphate rock.

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The American Agricultural Chemical Company

Chemical Division: 50 Church St., N. Y. 7, N. Y. • 33 plants and offices serving U. S., Canada, Cuba

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Technology
Newsletter

CHEMICAL WEEK
February 15, 1958

Atomic propulsion of space vehicles and satellites is due for a bigger play from Atomic Energy Commission. Lewis Strauss, AEC chairman, appearing before the Space Propulsion Subcommittee of the Congressional Joint Committee on Atomic Energy last week, said that nuclear power appeared very attractive for space propulsion, particularly where large payloads would be involved. AEC, he said, will step up research on its atomic-powered rocket, Project Rover.

The commission will probably ask for $10.5 million more for its Rover and $3 million more for Project Pluto, a nuclear-propelled ramjet. Also revealed at the hearings was the previously classified Project Snap. This is closely related to the Air Force's Pied Piper, a program for a reconnaissance satellite.

•

Olin Mathieson is aiming high with its rocket development program too. Said the firm's Eugene Miller last week: "We expect to conclude development activities in the near future, which would give us rocket engines suitable for space travel." The firm has already received a government contract to develop a rocket engine with a whopping 1-million-lbs. thrust. Also, of course, it is knee-deep in production and development of boron fuels, both liquid and solid.

•

A method to distinguish between reclaimed and virgin motor oil has been worked up by the Armour Research Foundation. The two types are so alike in properties that, until now, there's been no way to distinguish them. Foundation researchers, however, found that it can be done by infrared refraction patterns. This stems from the fact that the virgin oil is refined from a single or small number of crudes, while the reclaimed oils would normally be derived from a wide variety.

Researchers point out that the use of reclaimed oils is growing, see their technique as preventing possible misrepresentation.

•

A chemical to grow hair? William Neish, of the University of Sheffield in England, reports in the recent British Journal, *Nature*, that a derivative of dichlorodiethylsulfide (mustard gas) speeded up hair growth on a shaved portion of a rabbit's stomach. In a few months, a thick tuft was observed. The shaved area that was not treated remained hairless.

•

Experimental shipments of liquefied methane are due to get under way this year. Britain's Gas Council has just signed a contract with Constock Liquid Methane Corp. for tests between the Gulf Coast and Canvey Island in England. The United Kingdom will ante up $2 million for a half interest in the ship and $1 million for two land storage tanks.

The methane will be carried in a 340-ft.-long ship insulated with balsa and carrying a special ballast. Temperature will be –260 F. It will be moved to shore in a pipeline covered with 6 in. of insulation, and eventually will be carried (as a gas) by another pipeline (now being laid) to hook up with gases from the Shellhaven refinery.

Established by the Union Stock Yards and Continental Oil, Constock has been working on this idea for some time (*CW Technology Newsletter, Oct. 22, '55*).

It has been whipping up a great deal of interest in this country because of its potential economies and because of the possibility of its opening up large areas of the world to petrochemical development.

•

Pilot-plant quantities of pyroglutamic acid, a new biochemical intermediate, are now available from General Mills. The lactam of glutamic acid, the chemical is the only substance known (except glucose) that can be utilized by the brain as an energy source. It reportedly can substitute for glutamic acid in amino acid mixtures.

•

The Russians will report their fusion progress at the Geneva conference next September. Right now, they are "very close to the achievements recently reported in England." That's what Igor V. Kurchatov, director of the Atomic Energy Institute of the Soviet Academy of Sciences, says in response to a series of questions by *Pravda*, the Communist party's newspaper. He also agrees with the Western scientists that it will take years of research before an industrial thermonuclear reactor can be designed.

•

English translations of 20 major Soviet scientific journals will be available from Consultants Bureau Inc. (New York City) under an agreement with Mezhdunarodnaya Kniga, the Soviet government's publication export agency. The agreement is the first of its kind. Reports of the Academy of Sciences of the U.S.S.R., the *Journal of General Chemistry*, and Chemistry Section of the *Bulletin of the Academy of Sciences* are among the journals to be translated.

•

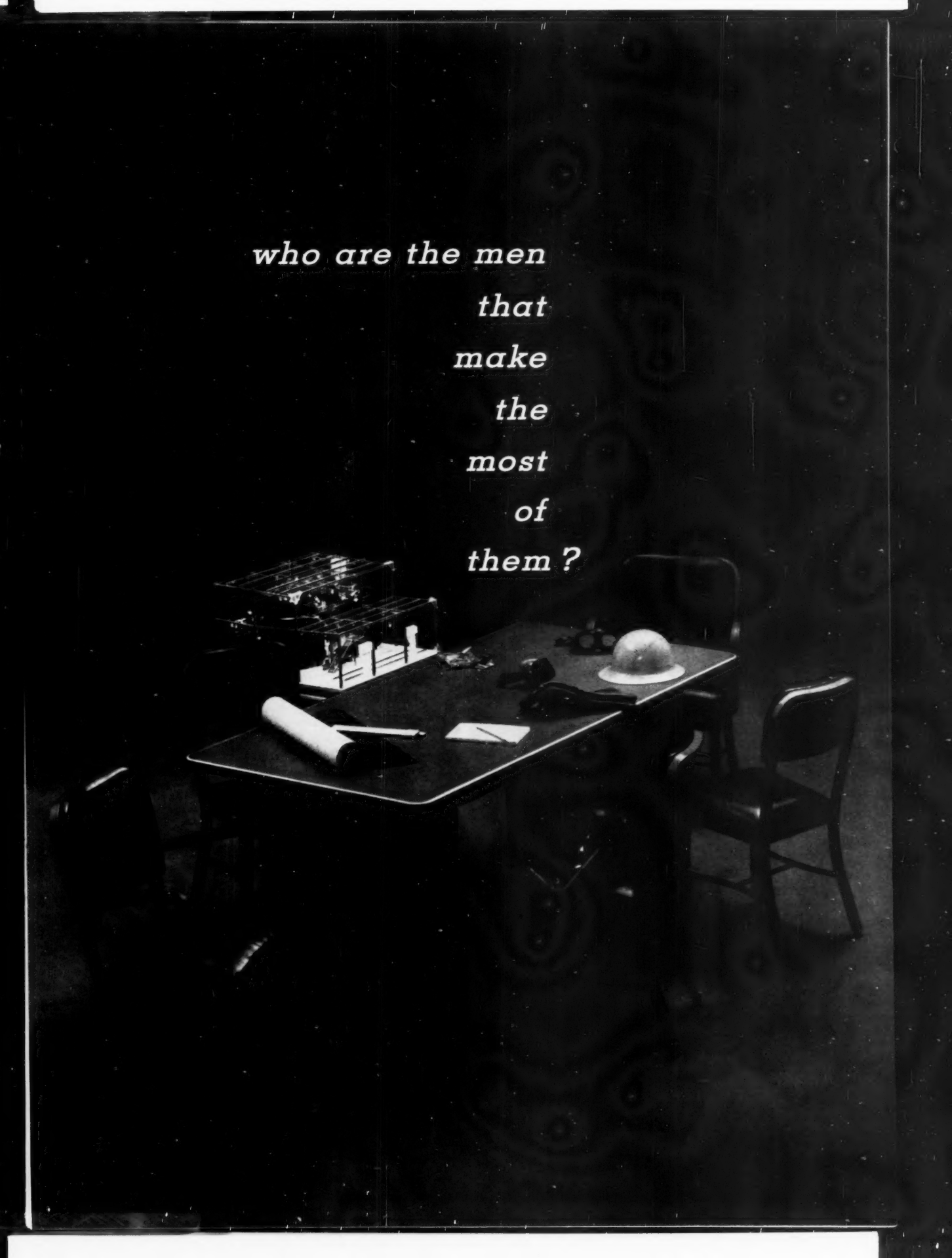
Another novel agreement to make scientific literature available has been reached by representatives of 14 major abstracting and indexing services. They've just formed the National Federation of Science Abstracting and Indexing Services.

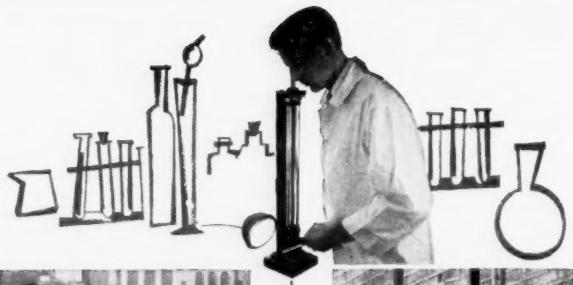
•

A stronger hand in radiation research is held this week by High Voltage Engineering Corp. (Burlington, Mass.), now that it has acquired control of Electronized Chemicals Corp. (New York City). Both firms have a long-standing interest in potential applications of radiation to chemical processing and the sterilization of surgicals and drugs.

In exchange for Electronized Chemicals stock, High Voltage has transferred its domestic electron processing patents to the firm.

who are the men
that
make
the
most
of
them?

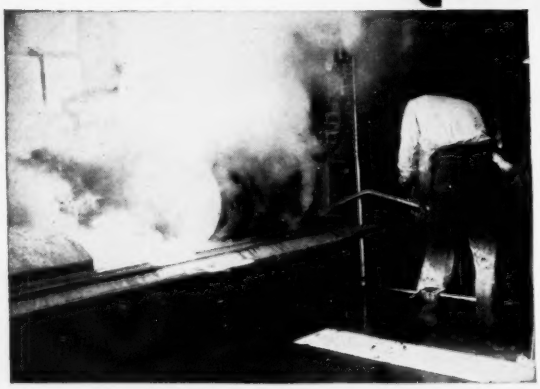




Samples for quality, clarity and color are taken, and sent to the laboratory prior to unloading any tank or transport.

Separate lines for each product eliminates any contamination.

QUALITY



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Speaker after speaker at CMRA-purchasing agent meeting in Washington's Sheraton Park issued a . . .

Call for Buyer-Market Research Teamwork

Last week, in the spacious Sheraton Hall of Washington's Sheraton Park Hotel—scene of Presidential inaugural balls—formal recognition of the tie between market research and purchasing was inaugurated. The occasion was the joint meeting of the Chemical Market Research Assn. and the Chemical Buyers' Group of the National Assn. of Purchasing Agents.

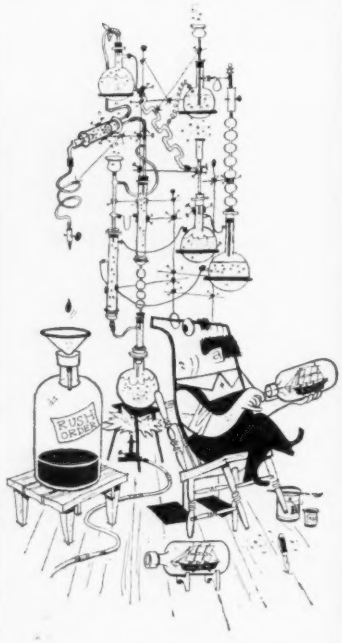
That closer cooperation between market researchers and purchasing agents is becoming mandatory for many chemical companies was emphasized by purchasing consultant and meeting keynoter L. J. Finnan, Jr. He indicated the magnitude of future chemical buying and selling problems by citing examples of revolutionary trends in current business thinking, brought on by rapidly shifting patterns and pressures of world trade.

Important too, Finnan noted, is the emergence of the Organization for European Economic Cooperation. Reason: from the "present levels of duties on trade between member nations, a steady downward march begins, and will continue until they have disappeared completely," perhaps in the next 12 or 15 years.

The effect of this common market on U.S. foreign trade is expected to be quite noticeable and "every sales manager is, or should be, asking himself what this trend of high-level thinking regarding tariffs, both here and abroad, is going to do to his sales," Finnan said. Meanwhile, every chemical industry buyer must prepare himself to answer management's question: "What effect will this have on the commodities we purchase?" Market researchers will be called upon to help both seller and buyer answer these posers.

The significance of the foreign markets problem cropped up in other talks. For example, H. J. Barnett, of Resources for the Future, and Frederick T. Moore, of Rand Corp. (firms that jointly analyzed the long-range growth of chemical industries), underscored the extent to which the U.S. chemical industry relies on foreign markets.

"Roughly a fifth or a quarter of U.S. chemicals output is bought by foreigners, in the form of chemicals and as other goods, which require large direct or indirect chemicals inputs." These direct and indirect



It's better to get it from Eastman

When you need a special organic in a quantity that strains your laboratory facilities or ties up your staff, try Eastman Organic Chemicals Department, *Distillation Products Industries,* Rochester 3, N. Y.

there are some 3600 Eastman Organic Chemicals for science and industry

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is a division of
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chemical export figures are about double the value of U.S. imports of chemicals or chemical content of other goods. Hence, they conclude, the U.S. chemical industry has a "major stake in the ability of foreigners to buy U.S. goods."

Day to Day Problems: Other speakers came to grips with more tangible purchasing problems faced by individual companies, explored ways in which market research can help solve them.

For example, When should a chemical firm buy the raw materials it needs? and When should it make them? No longer satisfactory, suggested T. G. MacGowan, director of advance planning for Firestone Tire & Rubber, is the once familiar practice of "decision by default," i.e., continued buying of raw materials because no studies have been made to determine if captive manufacture might be preferable.

But now there's another common pitfall, he says—overenthusiasm for self-sufficiency when facts indicate a plan of purchasing raw materials would be wiser. Typical areas of misjudgment include errors in cost accounting, the overlooking of risks, unawareness of likely labor problems, inadequate appreciation of the importance of proper timing.

One currently popular shortcut to solution of the complex problem of supply is the purchase of, or merger with, firms already producing the needed raw materials. But a great proportion of such decisions are wrong, says MacGowan, and the firms "usually" could have done better things with their money.

Help Swap: On a somewhat different tack, R. Weir III, buyer for Hercules Powder, urged purchasing agents to give all possible help to market researchers because, for one reason, the fact-finders may well get more satisfaction from a competitor. Too, such early contact with representatives of other companies may help stimulate future buying.

Weir also cautioned about overreliance on sketchy market studies, which may indicate shortages when, in fact, no shortages exist or are only of temporary nature. Many an ultimate overexpansion, he implied, can be attributed to superficial evaluations of actual market conditions.

E. E. Fogle, president of Union Carbide Chemicals Co., stressed continuing detailed market research for purposes of product development. The search for new uses for ethylene oxide, he said, ultimately led to the development and spectacular sales growth of polyethylene.

In new product development, Fogle observed, at least one big use must be clearly evident; in time, other uses will grow into significance. But there are other requisites for proper planning. Money and facility resources are, of course, usually quite evident; often overlooked, though vitally important, are the costs of acquiring and training new people to man an expanding organization.

George Lawson, Pennsalt Chemicals' director of marketing, gave attendees a close look at how Pennsalt's highly integrated fact-seeking organization functions.

Three types of forecasts are regularly prepared by his firm, said Lawson —short-range forecasts in terms of months, annual forecasts (quarterly), and long, five-year forecasts.

Pennsalt's methods involve extensive use of questionnaire methods by salesmen in the field, IBM tabulation of data, repeated checking of facts, and re-examination of the reasonableness of conclusions.

Rounding out the varied program was a thought-provoking contribution by banquet speaker Clifford C. Furnas, chancellor of the University of Buffalo. His topic: "New Doors to the Storehouse of Civilization"—a challenging look ahead at the research problems that must be faced in anticipation of dwindling supplies of vital natural resources.

The big problem facing research, Furnas said, is discovery of methods to economically extract vital natural raw materials from low concentration sources. Intensive research along these lines is needed now—little is in evidence.

In particular, Furnas thinks science should take a close look at biochemical reactions and kinetics. He pointed out that little is known, for example, on how the oyster manages to concentrate copper in its organs. Many other low-life forms, he added, are able to concentrate particular elements by highly selective reactions. "We need to crack the secrets of this selectivity and ability to concentrate."

Turning attention to ion-exchange

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

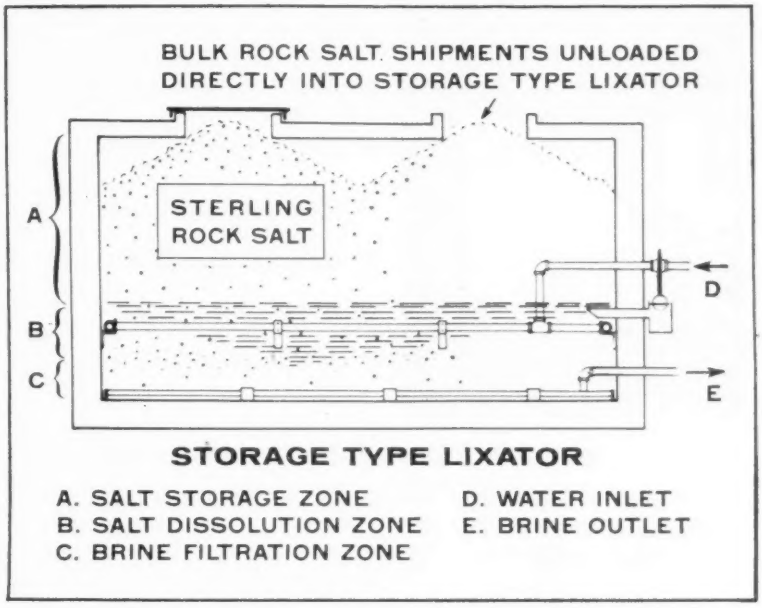
Producing Crystal-Clear Brine at Lowest Cost—by Self-Filtration

Today, more and more companies are using a foolproof brine-making process that produces crystal-clear brine from rock salt, *without using supplemental filter beds or other filtering devices.* This process takes place in the "Sterling Lixator," a rock-salt dissolver developed exclusively by International Salt Company. Operating on International's principle of self-filtration, the Lixator produces a rock-salt brine so high in purity and so brilliantly clean and clear that it can be used in many operations formerly thought to require highly refined evaporated salt.

Here, briefly, is how self-filtration works in the Sterling Lixator: A Lixator is filled with Sterling Rock Salt. Water, admitted near the top, dissolves salt as it flows downward. While flowing down, the brine made in this way becomes fully saturated, and can dissolve no more salt. Still flowing down, this brine is *completely filtered* by the salt-crystal bed in the bottom portion of the Lixator. Thus, the Lixate Brine drawn off through a discharge pipe at the bottom of the Lixator is clean, pure, crystal-clear—and the only source of power used is gravity, which costs nothing!

Other Lixator advantages. In addition to this superbly clean, fully saturated Lixate Brine, a number of other advantages are yours, when you use a Lixator:

- The Lixator permits salt storage and brine making at one location most convenient to the point of salt entry. *Pipes* deliver brine to points of use.
- Because Lixate Brine is piped to points of use, the work of moving dry salt from storage piles to other plant locations is eliminated. This can produce substantial savings in labor.
- The Lixator *automatically* controls salt feed, water feed, and brine discharge. Rapid, uniform brine production is maintained constantly, because in the Lixator there is no bridging, caking, or channeling.



The Storage Lixator — designed for larger operations. This is a combination salt storage tank and dissolving tank. On delivery, rock salt is unloaded directly into the Storage Lixator. The rest is automatic.

Many types of Lixators are available from International Salt Company. In addition to Storage Lixators, there are Silo Lixators and Sterling Model Lixators—in numerous designs to suit any plant layout. And every Lixator operates on the economical self-filtration principle.

For expert advice on the particular Lixator type that will do the best job for you, phone or write the nearest district sales office, or write to us direct. One of our sales engineers will gladly show you how this remarkable brine-making equipment can help you use salt most efficiently and economically.

Using salt efficiently in its many industrial applications calls for technical knowledge and experience. International Salt Company has both. Plus a continuing program of research and development in salt. These things can be put to work for you, in your plant, to help you get the most out of the salt or brine you use.

* * *

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Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn.; and Richmond, Va.

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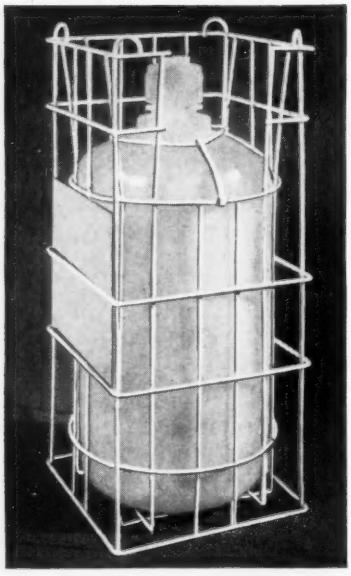

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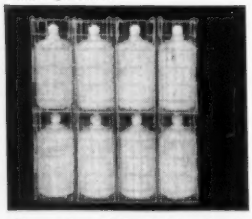
The old way with its many problems and high costs.



The modern "STEEL-X" Carrier that eliminates your old problems and changes high costs to low costs.

In looking for ways to save money, consider "STEEL-X." Simply replace your heavy, hard to handle and bulky boxed carboys with this modern way to distribute liquid chemicals. These Carriers of welded steel construction with new epoxy-phenolic coating are durable and serve for years without maintenance. Constructed with sides extending well above bottle top protecting the bottle necks, and providing a base for secure stacking. A collar locks bottle in securely. An unbreakable, puncture-proof POLYETHYLENE bottle used with carrier is much lighter than carboys. Every load of "STEEL-X" Carriers is a cost saving load.

• SEE ACTION PICTURES: Film loaned for demonstration: Ask to borrow our 16 mm film which runs for 8 minutes. See the advantages—the benefits—the economy.

• USERS OF CHEMICALS should write us direct if their Chemical Supplier does not as yet use this carrier.

• WE WILL GLADLY answer all questions and provide Chemical Distributors with complete details upon request.

• You stack 65% to 100% more "STEEL-X" Carriers in available space. You can stack them 2-3-4 high.

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processes, Furnas deplored the lack of knowledge of the kinetics, the secondary valences involved and the energy levels utilized in individual molecular exchanges. Understanding the nature of highly selective exchange reactions would enable well-controlled and ultraefficient use of dwindling natural resources.

It's clear, said Furnas, that some "multilateral approaches" to the problem will be required because very often industrial survival—particularly in the chemical field—depends on doing several things at once.

With this in mind, Furnas envisions the development of industrial complexes built around large nuclear power plants located on seashores. Such complexes might operate profitably by producing:

- Electrical power.
- Liquid fuel from photochemical reactions of neutron and gamma radiation on carbon dioxide and water, and other similar materials.
- Fresh water from sea water by a combination of electrochemical operations, diffusion and evaporation, which would utilize the waste heat from the nuclear reactor.
- Valuable materials from the processed sea water.

Coming March 8
CW Report
The Synthetic Fiber Industry

- Fiber capacities and production today, and projections to 1975.
- The inroads synthetic fibers are making on traditional fiber markets.
- Complete list of U. S. producers, plant locations, tradenames.
- Complete list of foreign producers and tradenames.

CHEMICALS OUTLOOK

February, 1958

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

PIPERAZINE AND PYRAZINE PRODUCTION UNITS ANNOUNCED

Wyandotte's new unit for the quantity production of methylpyrazine and 2,5-dimethylpyrazine is now on stream. The first unit of its kind in the chemical industry, this plant complements Wyandotte's recently opened large-capacity unit for making 2-methylpiperazine and 1,4-bis-(2-hydroxypropyl)-2-methylpiperazine (DHP-MP).

Since early 1955, when the substituted piperazines and pyrazines were first announced, there has been extensive industrial and academic research. As a result of the progress in chemistry of pyrazines, increased demand has developed for these products . . . its new production unit is Wyandotte's answer to this need.

As chemical intermediates, the substituted pyrazines are opening new areas of research in amine chemistry.

In the pharmaceutical field, for example, one of the recent applications for the pyrazines is in the preparation of sulfa drugs . . . also derivatives of pyrazinoic acid have been under study for the chemotherapy of tuberculosis.

As a polymer intermediate, vinyl pyrazine (formed from methylpyrazine and formaldehyde) introduces a whole new field of high polymer research.

In the production of polyurethane foams, 1,4-bis-(2-hydroxypropyl)-2-methylpiperazine (DHP-MP) has proved successful as an odorless catalyst. It can be used as a replacement for other amine catalysts at the same concentration by weight, to give foams with good physical properties, including low compression set values.

The effects of "DHP-MP" and other substituted amine catalysts on the foaming characteristics and physical properties of flexible polyether urethane foams are discussed in a Wyandotte technical paper, "Effects of Catalysts on Urethane Foam Properties."

Also, a new guide to the reactions and applications of the pyrazines has been published, which includes a survey of the most significant literature covering this field of research. Among applications discussed: use of pyrazines in the preparation of pharmaceutical products, high polymers, insecticides, and dyes.

Copies of both are available upon request, as are samples of: methylpyrazine; 2,5-dimethylpyrazine; 2-methylpiperazine; and 1,4-bis-(2-hydroxypropyl)-2-methylpiperazine (DHP-MP). Address inquiries to Department CO for prompt attention.

Wyandotte CHEMICALS

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SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • MURIATIC ACID • HYDROGEN • DRY ICE
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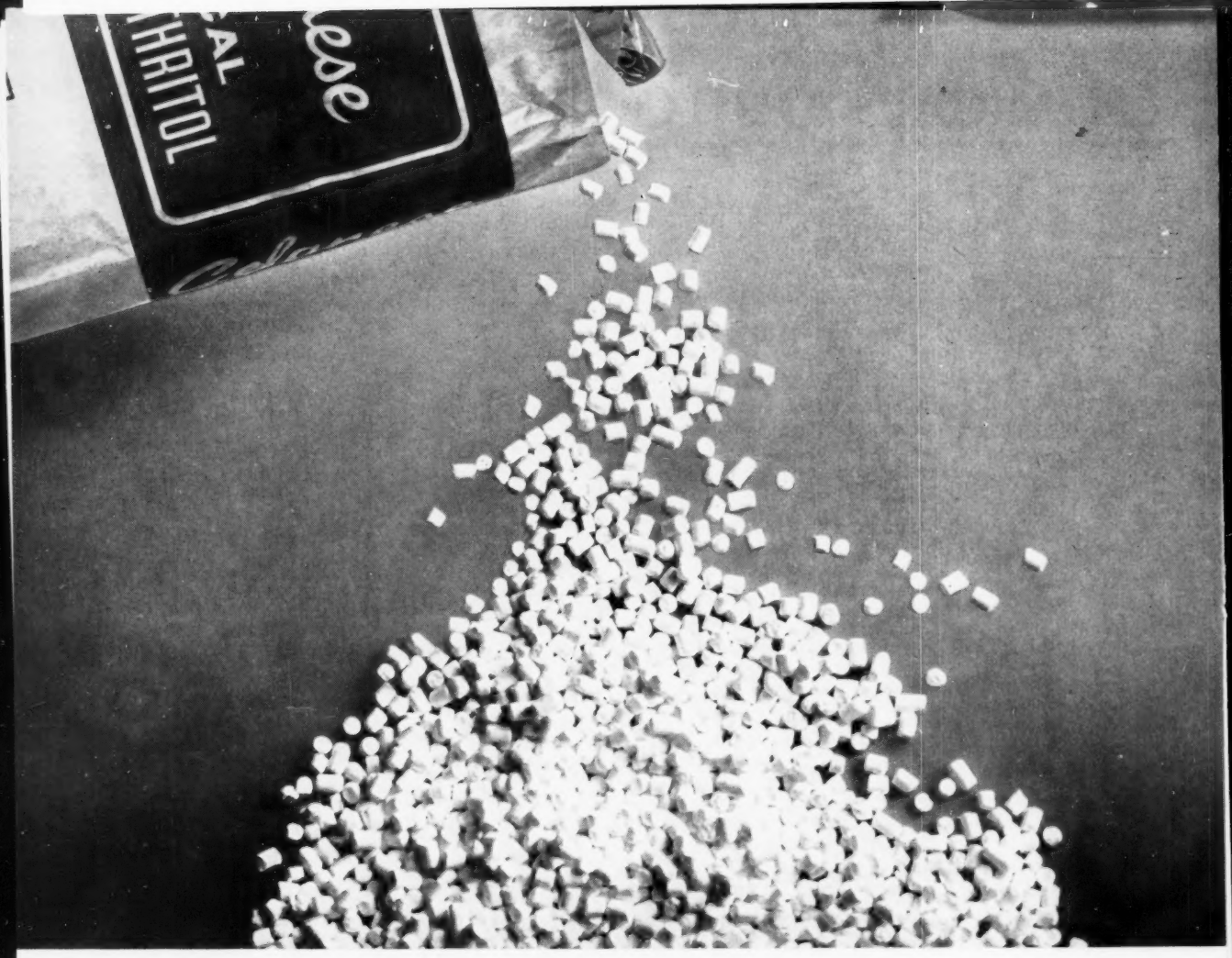
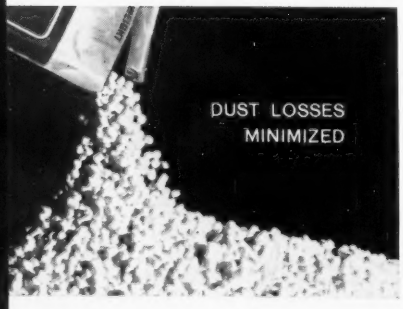
CHLORINATED SOLVENTS • *OTHER ORGANIC AND INORGANIC CHEMICALS*



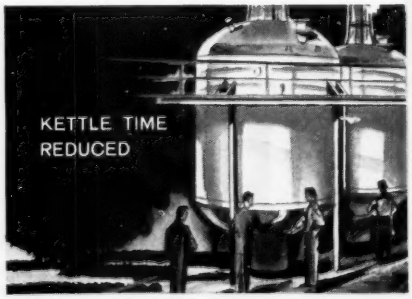
You're looking at the newest development in TECH GRADE P. E.

Pelletized Pentaerythritol



This new and revolutionary pelletized form for P.E. makes these two important advantages possible. When Celanese P.E. pellets are poured, there's no dust storm . . . there's no P.E. escaping up the stack. It puts an end to the costly and time-consuming interruption of cooking cycles to add more P.E. because the full and required quantity never reached the resin reactor.

If you have signs of P.E. snow on your plant roof, you should investigate the cost-saving possibilities of this new Celanese first — TECH GRADE PENTAERYTHRITOL IN PELLETIZED FORM. Celanese®



Pelletized Pentaerythritol . . . a new Celanese development

CHEMICALS

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SEE CHEMICAL MATERIALS CATALOG AND CHEMICAL WEEK BUYERS' GUIDE FOR COMPLETE LISTING OF CELANESE CHEMICAL PRODUCTS

Market Newsletter

CHEMICAL WEEK
February 15, 1958

Price break for pentaerythritol consumers this week—hefty cuts are in effect. Led by Heyden Newport, major PE producers last week shaved 2½¢/lb. off the price of technical-grade material in carload and truckload lots. New price: 29½¢/lb. At the same time, zone price of mono-PE was reduced from 32¢ to 31¢/lb. and the Zone 2 (West Coast) price differential on both grades was cut 1¢/lb. But no one is certain that the cuts will stabilize the market.

Price structure for pentaerythritol has been soft for some weeks; the new schedules bring list prices into agreement with market conditions. Causing the softness: competition from glycerine at recently reduced prices; added capacity (*CW Market Newsletter, Jan. 25*).

Further glycerine price reductions are possible (because of slowing demand and climbing stocks); and if these materialize, chances are that PE producers will also consider additional changes. But there's a strong deterrent to further cuts—production costs are still mounting.

•

Britain's Board of Trade is canceling all zinc sales from its stockpile; a move designed to bolster the market that's been staggering under a big surplus for some time. For the past six months, the board has been offering some 3,000 tons/month, and the sales were to have continued until May.

Although withdrawal of that amount from the market should help, some zinc observers feel that the quantity held back isn't enough. The action, incidentally, follows by a little over a month an identical decree by the British government on stock-piled copper.

•

Amyl naphthalene is the latest victim of the profit squeeze. Sole U.S. producer, Pennsalt, plans to discontinue making it late this year. Dodecyl benzene has largely replaced the chemical in big-volume applications, and amyl naphthalene's profitability has steadily declined. To ease supply problems, Pennsalt will offer complete production know-how to customers that still require amyl naphthalene and want to make their own material. There's an outside chance that Pennsalt may stay in the business. If that happens, however, its price will rise from that of a "volume" item to a level characteristic of "specialty volume."

•

Are price hikes in the offing for cottonseed and soybean oil? That possibility became apparent last week as the government began issuing dollar grants to foreign countries for the purchase of surplus commodities. Turkey received an okay to buy 65,000 metric tons, and Spain is dickering for 220,000 tons. Italy, Poland and some South American coun-

tries may also get authorizations. Soybean oil output will not increase enough this season to counterbalance a big drop in cottonseed oil production. Although cottonseed oil is now on the list of surplus commodities, the U.S. Dept. of Agriculture predicts supplies will dwindle and the carryover between seasons this August will be the lowest in a decade.

•

Paralleling the spurt in synthetic fiber output in the U.S. is a small-scale boom in Germany. Farbenfabriken Bayer AG. will double capacity of its new 500-tons/month plant for polyacrylonitrile fiber. German production of synthetic fibers will hit 30,000 tons this year, Bayer estimates.

•

Revamping of urea facilities at the South Point, O., plant of Allied Chemical & Dye's Nitrogen Division will make the firm the largest urea producer in the country. The increase will boost current capacity of 80,000 tons/year to 110,000 tons/year—which will match the capacity of Allied's other plant, at La Platte, Neb. The expansion is scheduled for completion late in '58.

•

Also planning to boost urea capacity this year is Grace Chemical, which will add to and modify its existing facilities at Memphis, Tenn. Capacity of the firm's present facilities has been estimated at 55,000 tons a year (*CW, June 22, '57, p. 86*), but there's no official indication how much capacity will be increased. Spokesmen do say, however, that production will be upped by about one-third the present rate.

•

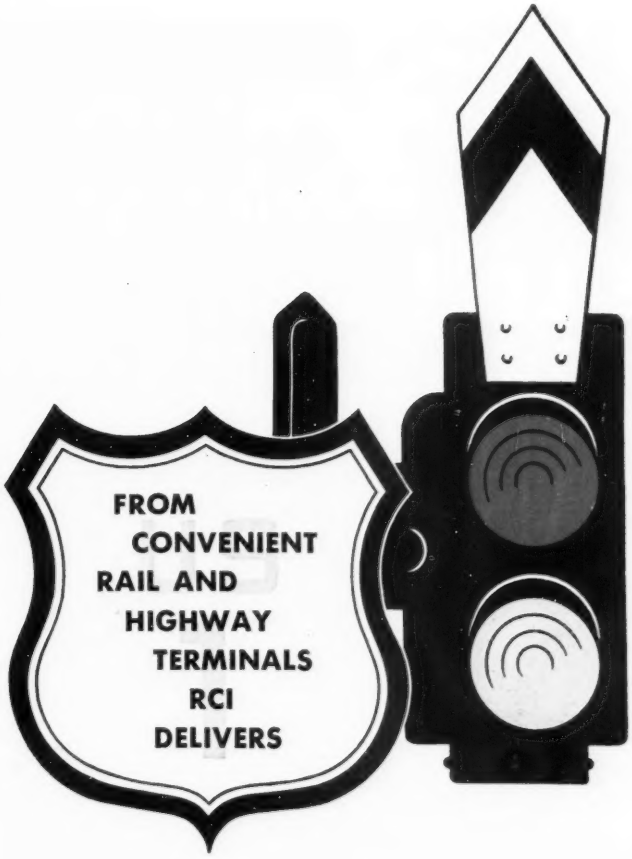
U.S. consumption of new rubber totaled 1,468,685 long tons in '57—2.2% more than in '56—according to Bureau of the Census. That's somewhat less than indicated by earlier industry estimates (*CW Market Newsletter, Jan. 4*).

Production of all types of synthetic rubber amounted to 1,118,315 l.t. in '57, 3.6% more than in '56. Stocks of natural and synthetic rubbers in the hands of industry at the end of Dec. '57 amounted to 301,622 l.t., compared with 319,065 l.t. at the same time in '56.

SELECTED PRICE CHANGES WEEK ENDING FEBURARY 10, 1958

DOWN	Change	New Price
Ethyl bromide, tech., 98%, c.l., frt. alld., E.	$0.03	$0.43
Pentaerythritol, tech., bgs., c.l., dvld., E.	0.025	0.295
Platinum metal, wks., oz.	1.00	74.00
Tallow, inedible, fancy, bleachable, tanks, dlvd.	0.0025	0.07875
Tung oil, dms., c.l., N.Y.	0.0025	0.2250

All prices per pound unless quantity is stated.



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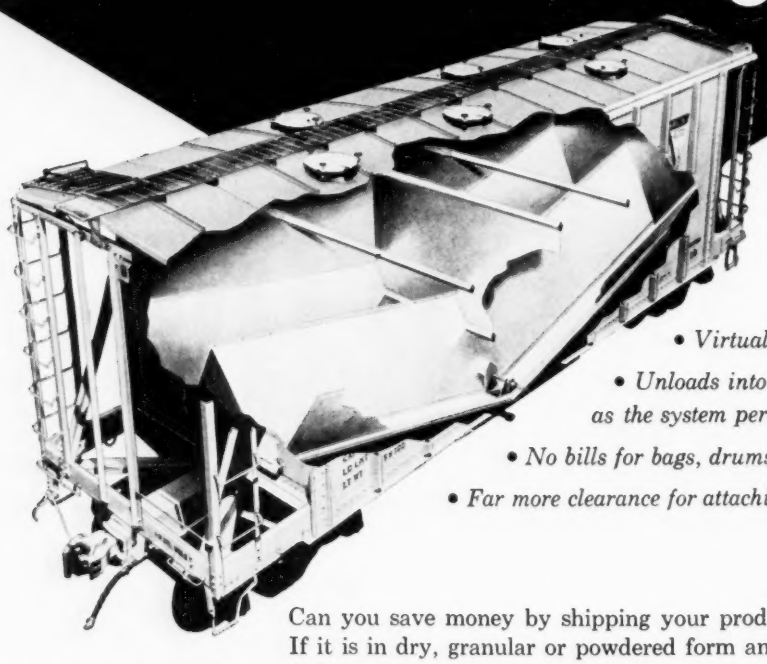

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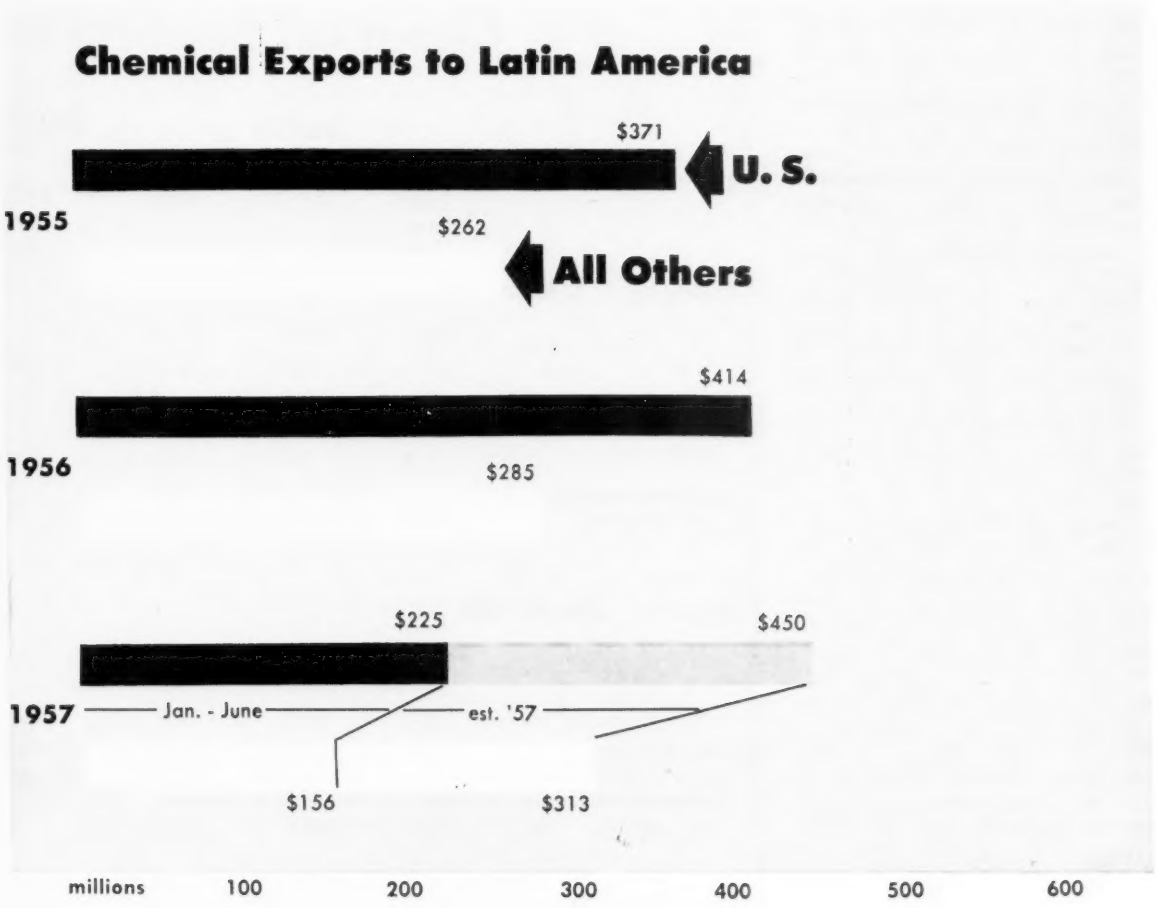


Export Boom: Latin Sales Hit New Peak

The U.S.'s biggest foreign chemical customer—Latin America—was on a buying spree last year. Just-released Commodity Trade Statistics* of the United Nations show that U.S. exports to the area soared to the $225-million mark during the first six months of 1957.

That's a whopping 25% hike over first-half '56. And it points to a record U.S. export total of $450 million for the full year.

But if U.S. producers were enjoying expanding markets south of the border, their European and Canadian counterparts were doing even better, relatively speaking. Collectively, Europe and Canada upped exports to the area 31% in first-half '57, raked in $156.5 million. As a result, the U.S. share of the market slipped slightly—from 60.2% during Jan.-June '56 to 59.2% for the same period last year.

The U.S. increased its dollar export volume in seven of the eight major U.N. chemical classifications. At the same time, however, the U.S. took a smaller slice of the market in five categories, and increased its share in three. With a few exceptions, however, the changes were small. Stability now generally characterizes national market positions. Here's how the competitive situation is (*see chart, pp. 76-78*):

Organic Chemicals: Although the first-half total market in organic chemicals expanded considerably (from $36.7 in '56 to $46.6 million in '57), the U.S.'s share dwindled 2.5 percentiles. Dutch, Italian, British and West German producers all upped their cut of the business. Yet, the U.S. managed to retain a healthy lead. With 58.5% of the market, the U.S. exported products worth $27.3 million in the first six months of '57.

Inorganic Chemicals: Total exports in this category increased $2.7 million, to $42.5 million, in first-half '57. The U.S. slightly hiked its market share (0.7 percentiles) and its total exports (from $21.4 million to $23.2 million). Other major inorganic chemical exporters experienced similar volume gains, but Yugoslavian exports fell sharply (75%) to barely $200,000 in the six-month period.

Coal-Tar Dyes: Switzerland, with

*All figures given include shipments to European territories in the Caribbean area but exclude exports from the U.S.S.R. and all its satellite nations except Yugoslavia.

33.2% of the coal-tar dyes market, continues in top position. West Germany, which drew almost even with Switzerland in first-half '56, faltered badly later in the year and is still slipping. It accounted for 26.6% of the total $12.4-million market during Jan.-June '57. The U.S. market share fell slightly to 17.2%. France, on the other hand, is staging a strong comeback, has boosted its share 5.6 percentiles (to 7.1%).

Soap and Cosmetics: Little change took place in soap and cosmetics. Total export ($16 million) during the first six months of '57 ran some $3.2 million ahead of first-half '56 exports. Both West Germany and Switzerland, however, accounted for a slightly larger share of the '57 market. France and Britain's positions deteriorated by more than a full percentile each.

Drugs and Pharmaceuticals: Percentage-wise, Switzerland, Italy and France were the big gainers in pharmaceuticals. In first-half '56, they commanded 13.4% of the market; in first-half '57, these countries upped their share to 17.4%. Although both the U.S. and West Germany exported more ($57 million and $6.4 million) in first-half '57 than in first-half '56, both gave ground in their market share. The total market grew considerably in the same period ($85.7 vs. $73.7 million).

Paints: Stability characterized the competitive position of nations bidding for the Latin markets for protective coatings. The relative market position of the "big three"—the U.S. (72.9%), Britain (13.2%) and West Germany (6.7%)—scarcely changed. All increased their exports in an expanding market. Total first-half '57 exports: $19.2 million.

Fertilizers: Plant nutrient exports increased sharply in the Jan.-June '57 period. Some $41 million worth was shipped to Latin consumers. During the similar '56 period, the area's purchases totaled $28 million. Once again, the U.S. led the field, achieved 63.4% of the market (it was 61.5% in first-half '56) and rang up some $26 million in sales. France and Canada also scored substantial percentage gains. But West Germany and Belgium-Luxemburg dropped approximately 2.4 percentiles each, despite their larger volume of sales.

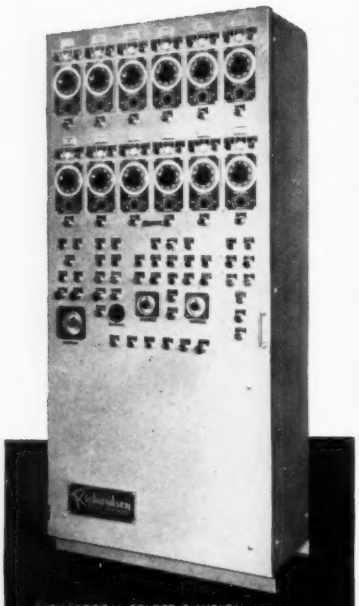
Chemical Materials-NES: This is a

Chemical Exports to

	Sales (million dollars)			Market Sh (p
	1957 Jan.-June	1956	1955	1957 Jan.-June
Inorganic Chemicals				
U.S.	$23.2	$44.2	$37.5	54.4
U.K.	8.6	17.0	13.5	20.3
West Germany	4.4	8.6	7.6	10.3
France	1.3	2.6	4.5	3.0
Italy	1.3	1.5	2.0	3.0
All exports	42.5	83.7	74.4	
Organic Chemicals				
U.S.	$27.3	$47.0	$42.1	58.5
U.K.	2.7	4.0	4.0	5.7
West Germany	10.0	16.5	13.7	21.4
Netherlands	1.6	2.1	1.1	3.4
Italy	1.3	2.2	2.8	2.8
All exports	46.6	80.3	70.5	
Coal-Tar Dyes				
U.S.	$2.1	$4.7	$4.9	17.2
U.K.	1.3	2.3	2.0	10.6
West Germany	3.3	6.9	5.4	26.6
France	0.9	1.0	1.6	7.1
Switzerland	4.1	9.2	7.7	33.2
All exports	12.4	26.5	24.6	
Chemical Materials Not Elsewhere Specified				
U.S.	$40.6	$78.1	$76.3	51.8
U.K.	12.8	19.8	22.2	16.3
Canada	7.7	12.0	16.0	9.8
West Germany	10.2	18.3	14.4	13.0
France	2.6	2.4	4.9	3.3
Netherlands	1.9	4.1	3.0	2.4
All exports	78.3	143.1	144.5	

Latin America

Share (percent) 1956	Share (percent) 1955		Sales (million dollars) 1957 Jan.-June	Sales (million dollars) 1956	Sales (million dollars) 1955	Market Share (percent) 1957 Jan.-June	Market Share (percent) 1956	Market Share (percent) 1955
		Drugs and pharmaceuticals						
52.6	50.4	U.S.	$57.0	$103.9	$96.5	66.5	67.5	67.6
20.2	18.2	U.K.	4.1	7.3	7.2	4.8	4.8	5.0
10.2	10.2	West Germany	6.4	12.8	9.6	7.4	8.3	6.7
3.1	6.1	France	1.7	1.9	3.1	2.0	1.2	2.1
1.8	2.6	Italy	2.0	3.2	4.2	2.4	2.1	2.9
		Switzerland	11.1	17.1	16.9	13.0	11.2	11.8
		All exports	85.7	153.2	142.7			
		Soap and cosmetics						
58.5	59.7	U.S.	$8.8	$14.8	$15.4	55.3	51.9	58.6
4.9	5.7	U.K.	3.6	6.6	5.9	22.5	23.2	22.3
20.5	19.5	France	1.5	3.5	2.0	9.2	12.4	7.8
2.6	1.6	West Germany	0.6	1.1	1.0	3.9	3.7	3.9
2.7	4.0	Switzerland	0.9	1.7	1.6	5.8	6.1	6.2
		All exports	16.0	28.5	26.3			
		Fertilizers						
17.6	19.7	U.S.	$26.0	$33.3	$26.3	63.4	58.6	51.1
8.6	8.1	U.K.	0.4	0.7	3.0	1.0	1.2	5.9
26.0	21.9	Belgium-Luxemburg	2.9	6.0	6.0	7.2	10.6	11.7
4.0	6.4	West Germany	7.3	11.6	8.8	17.9	20.4	17.2
34.6	31.2	France	3.1	3.0	3.8	7.6	5.3	7.3
		Canada	0.8	0.5	0.1	2.0	1.0	0.4
		All exports	41.0	56.8	51.4			
		Paints						
54.6	52.8	U.S.	$14.0	$25.1	$26.5	72.9	71.3	72.4
13.9	15.4	U.K.	2.5	4.8	4.4	13.2	13.5	12.0
8.4	11.1	West Germany	1.3	2.2	2.0	6.7	6.3	5.4
12.8	10.0	Netherlands	0.4	1.1	0.9	2.2	3.0	2.4
1.7	3.4	Canada	0.3	0.7	0.5	1.8	2.1	1.5
2.9	2.1							
		All exports	19.2	35.2	36.6			



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catch-all group and embraces such diverse items as plastics, insecticides, printing inks, starches and gums. As in many other commodity export areas, the U.S. upped exports but lost some percentage points of its total market share. While U.S. sales expanded, from $37.3 million to $40.6 million, its market share dropped 4.6 percentiles, to 51.8%. Much of the U.S. loss was Canada's gain; Canada's exports totaled $2.7 million more in first-half '57 than in '56; its market slice grew from 7.5% to 9.8%. The first-half pace suggests a $157-million total for the category—a 9.5% hike.

Ease-Off in Latin America? Fast-growing local chemical industries—spurred in large measure by foreign investment—and a rapidly growing population are the main reasons behind the rapid surge in Latin American imports. But just how well this situation will hold up in '58 is debatable. Most countries (except Venezuela) now face serious trade deficits. Thus, many forecasters expect a modest drop in '58 Latin-American imports.

DATA DIGEST

• **Chemical data:** Statistical Summary No. 2 updates information in latest edition of Chemical Statistics Handbook. Wage, hour, employment, production and price trends for first six months of '57 are presented in tabular form. Price: $1, Manufacturing Chemists' Assn. (Washington, D.C.).

• **Cobalt:** "Bibliography on Electroplating Cobalt and Cobalt Alloys" surveys literature on electroplating cobalt and its binary and ternary alloys through June '57. Cobalt Information Center, Battelle Memorial Institute (Colubus, O.).

• **Soluble silicates:** 16-page booklet gives physical and chemical properties of liquid and dry sodium and potassium silicates. Applications suggested in adhesives, soap and detergents, cements, sizes, coatings and coagulants. Philadelphia Quartz Co. (Philadelphia).

• **Feed ingredient:** Data sheet and composition calculator device present specifications and applications of a stabilized animal fat and dehulled, solvent-extracted soybean oil meal. Standard Feed & Fertilizer, Inc. (Milwaukee).

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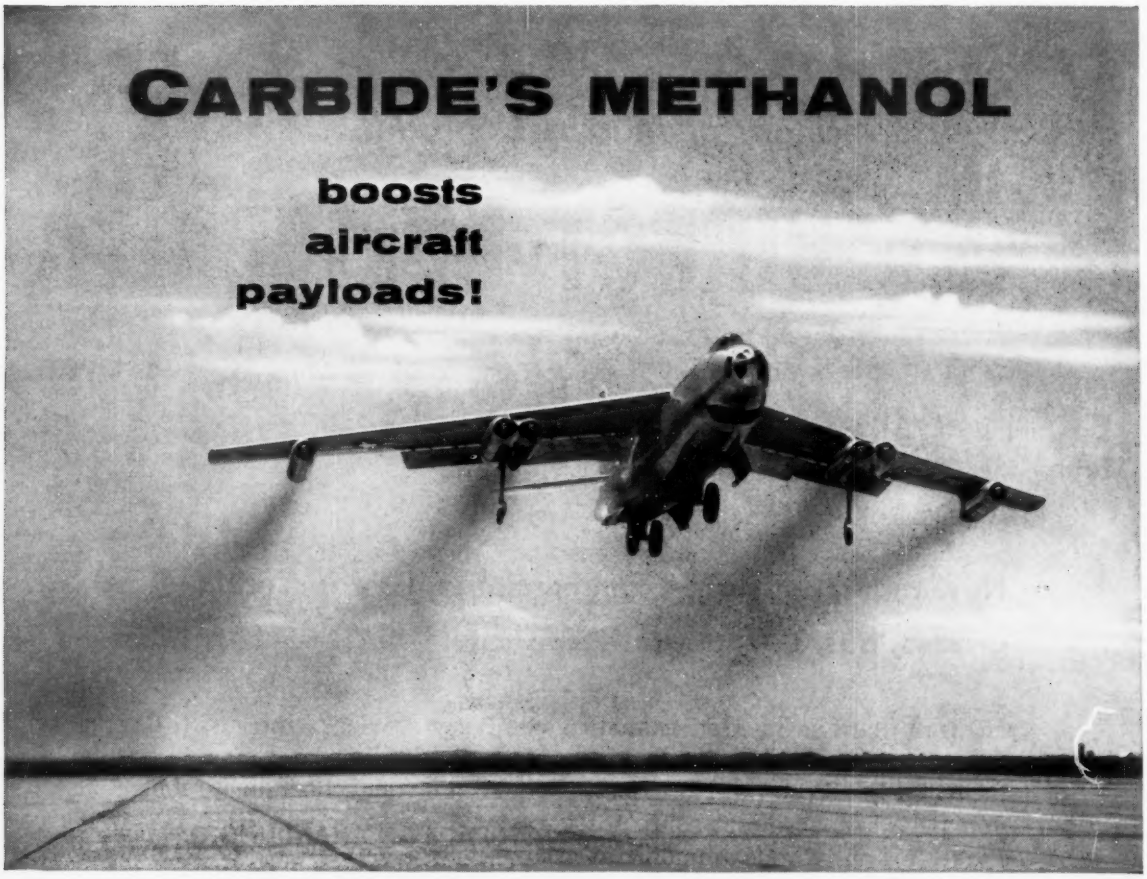

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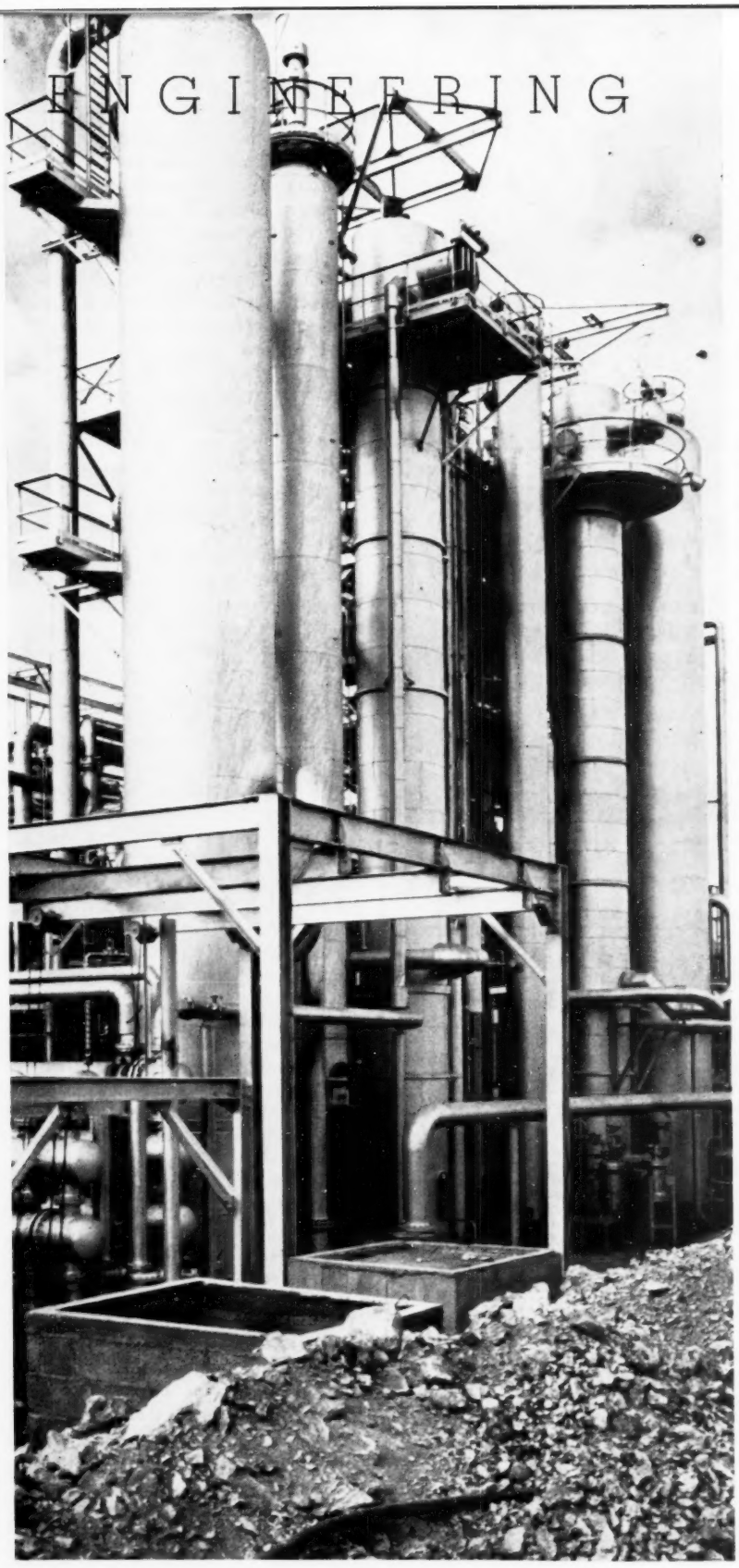


Naphtachimie brings five-year know-how and twice-expanded plant.

Heading the Bill in Round-Robin Process Parley

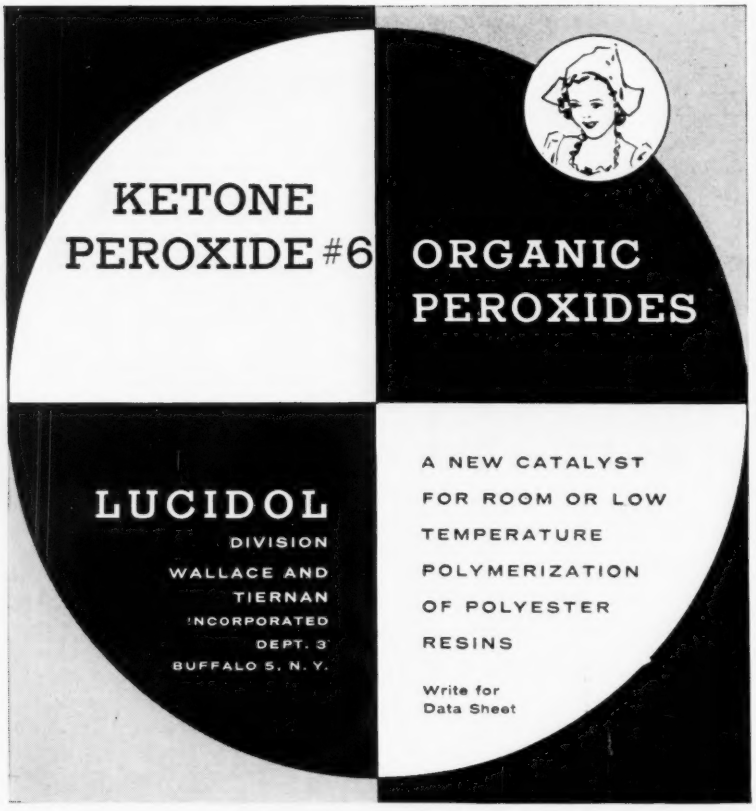
Scientific Design Co. (New York) is setting the stage this week for an international process parley. First meeting of its kind, it's being arranged to give SD's ethylene oxide process licensees a chance to get together and compare notes.

The idea of cross-fertilizing process know-how among its many clients is not a recent innovation at SD. The plan has been a pet project of Executive Vice-President Ralph Landau ever since the company set out in 1945 to specialize in hard-to-make organics. And though the company has often served as middle-man in the exchange of foreign process know-how (*CW, June 25, '55, p. 94*), the upcoming meeting will be the first at which almost all of the cooperating licensees will be represented.

One reason why SD has made provision in its licensing agreements for the feedback of process information is the company's unique scope of activities both here and abroad. By taking full advantage of the combined efforts of its own process development facilities and of its customers' operating groups, the company is able to give maximum service to all.

There's also an altruistic motive behind the promotion of international cooperation since it works to the mutual economic advantage of all nations represented by the cooperating industries. The chemical process industries, Landau feels, are one of the basic common denominators of domestic and foreign groups. As such, they are a logical beginning for international cooperation and can go a long way toward overcoming the anti-Americanism created by the current upsurge in foreign nationalism.

Who'll Be There: Though attendance at SD's ethylene oxide parley will be strictly voluntary, chances are that most of the company's licensees will want to be in on the exchange of know-how. And, as a result of SD's



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extensive efforts in European countries, foreign technology is certain to be well represented at the meeting. Foreign licensees eligible to attend include:

- Naphtachimie—first company to employ SD's direct-oxidation process (in '53 at Lavera, France), Naphtachimie has twice expanded the original installation (from an initial capacity of 17 million lbs./year to its present output of about 30 million). It recently approved the construction of a second direct-oxidation unit that's now getting under way. Several of the processing innovations on the agenda of the process conference were developed or first employed in Naphtachimie's plant.
- Societe Chimique des Derives du Petrole (Antwerp, Belgium)—almost ready for startup, this plant represents a combine of important Belgian companies (Olin Mathieson also has a small stock interest in it), is sponsored by the Societe Generale, largest banking group in Belgium.
- Chemische Fabrik Holten, GmbH. (Oberhausen-Holten, Germany)—the first German company to contract with SD, Holten is owned jointly by Badische Anilin- & Soda-Fabrik AG. (46%), Ruhrchemie AG. (29%) and Th. Goldschmidt AG. (25%). BASF cooperated with SD on the engineering of the plant and was the contractor for the Holten group. Due onstream within the next few months, the direct-oxidation facility will approximately double Holten's output of ethylene oxide from coke-oven ethylene. An older chlorohydrin process unit of the same general size as the new plant will probably continue operation.
- Mitsui Petrochemical Industries Ltd. (Iwakuni City, Japan)—first trans-Pacific installation of SD's ethylene oxide process, this soon-to-be-completed Japanese plant has been considered as a possible site of the international get-together.
- Marles - Kuhlman (LeHavre, France)—sublicensed by Naphtachimie, M-K will start up a 17-million-lbs./year plant this year.

Rounding out the list of invited guests will be these American licensees:

- General Aniline & Film Corp. (Linden, N.J.). Due onstream officially this month, GAF's 60-million-lbs./year direct-oxidation plant is the largest completed by SD to date. Esso is supplying the ethylene from its

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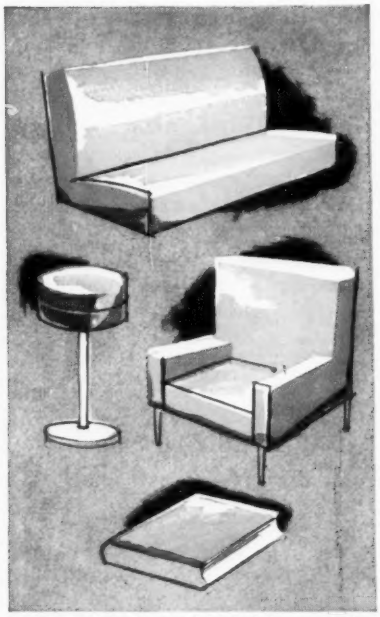
PRODUCT NEWSLETTER

featuring **THF** *tetrahydrofuran*



Pastel-colored vinyl upholstery retains its new appearance longer with top coatings made with THF.

THF-applied top coatings give pastel-colored upholstery rich luster and high soil resistance

Today's color revolution is producing smartly turned-out auto interiors and home furnishings in decorator pastel colors. As a result, specifications for soil and stain resistance in the supported fabrics and vinyl sheeting used in these applications are being given even greater emphasis.

Modern tastes also dictate that these materials must have the luster of leather . . . plus high resistance to tearing, abrasion, flexing, moisture, chemical and sunlight attack.

Manufacturers of automobile and upholstery fabrics have found that top coatings made from high molecular weight polyvinyl chloride resins fill all these requirements. That's where the powerful solvent action of Du Pont tetrahydrofuran comes in. At room temperatures this colorless liquid dissolves these resins, which are practically insoluble in other low-boiling solvents. Tetrahydrofuran's high solvent power and rapid solvent action assure good adherence of top coats and permit operation at increased machine speeds.

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Efficient recovery methods cut costs. Efficient recovery of THF from solvent applications greatly reduces the cost of this superior solvent. To help you, Du Pont is prepared to assist in the design of both carbon adsorption and water-scrubbing recovery systems.

Availability. Tetrahydrofuran is available in drum, carload-drum, and tank-car quantities. Working samples also are available to manufacturers interested in investigating THF-applied top coatings. Du Pont's technical force will be glad to work with you in developing your particular application of THF. For the complete THF story, write to:

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Electrochemicals Department
Chlorine Products Division CW-2
Wilmington 98, Delaware

PHYSICAL PROPERTIES of THF

Appearance	Colorless, mobile liquid
Odor	Etherlike
Molecular weight	72.10
Freezing point	-108.52°C.
Boiling range	65°-67°C.
Flash point (Tag closed cup)	6°F.
Vapor pressure, mm Hg. at:	
25°C.	176
45°C.	385
66°C.	760
Solubility	miscible with water, soluble in most organic solvents.

OTHER USES for THF

Versatile THF is also used as solvent in PVC adhesive formulations, in casting of PVC film, and in applying coatings of PVC and "Saran" resins to films and fabrics. It is finding increased use as a reaction solvent. For specific information on any of these uses write to the address on the right.

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nearby Bayway refinery, will likely take much of GAF's ethylene glycol output.

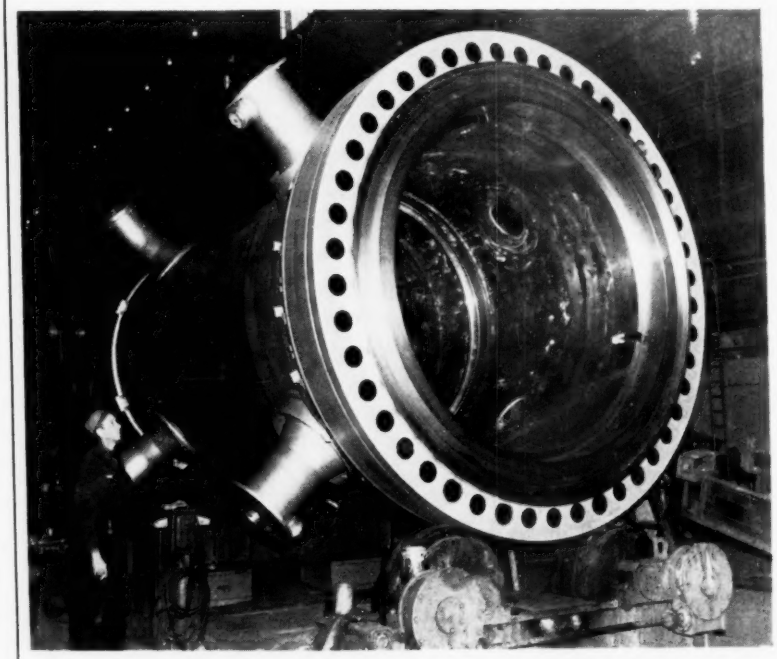
• Jefferson Chemical Co. (Port Neches, Tex.). Latest of SD's three U.S. installations, Jefferson's 60-million-lbs./year plant will approximately double the company's output of ethylene oxide, which it made previously only by the chlorohydrin process. Startup is scheduled for this summer.

Other SD licensees: Allied's Nitrogen Division, whose direct-oxidation plant at Orange, Tex., was the first in this country, and Farbenfabriken Bayer (SD's second German licensee). Joining what may become a significant trend toward mergers* of German chemical companies with petroleum producers, Bayer just announced the transfer of its Dormagen ethylene oxide plant to Erdoelchemie AG.—a jointly owned subsidiary of Bayer and The British Petroleum Co., Ltd. (through the latter's German subsidiary, BP Benzin- und Petroleum).

*First such merger was the formation of Rheinische Olefin Werke (Wesseling, Germany) by BASF and the German subsidiary of Royal Dutch-Shell. Rheinische produces ethyl benzene and polyethylene.

What They'll Discuss: Despite its encouragement of information swapping among licensees, SD keeps the novel details pretty much from outsiders. However, Landau has outlined three general topics—improved catalyst manufacture, modified reactor design, new operating techniques—likely to be of interest to all processors represented at the meeting.

Information brought to the process parley by the newly operating plants, says Landau, should contribute substantially to mutual benefit of all.



Boost for Atom-Power Ship Program

This 100-ton pressure vessel was recently shipped by Foster Wheeler Corp. to Naval Reactors Facility (Arco, Idaho). There, it will become the reactor vessel of the prototype nuclear propulsion plant being built for the Navy's atom-powered surface ship program. The program now includes two ships: a destroyer (F1W), the *Long Beach;* and an aircraft carrier (A1W), as yet unnamed. Westinghouse Electric Corp. is the prime contractor for the prototype plant, which will be the Navy's permanent testing installation. In addition to the Navy's program, Atomic Energy Commission is also readying a nuclear-powered merchant ship, the *Savannah.*

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BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

For Sale

Sharples Model AS-16 Super Centrifuge. St. St. contact parts. Perry, 1415 N. 6th St., Phila., Pa.

Groen 150 gallon St. St. Jacketed Kettle. Double motion agitators. Perry Equipment Corporation, 1415 North Sixth Street, Phila. 22, Pa.

Simpson #1H Intensive Mixer, 4' dia., S. S. Contact parts. Perry, 1415 N. 6th St. Phila., Pa.

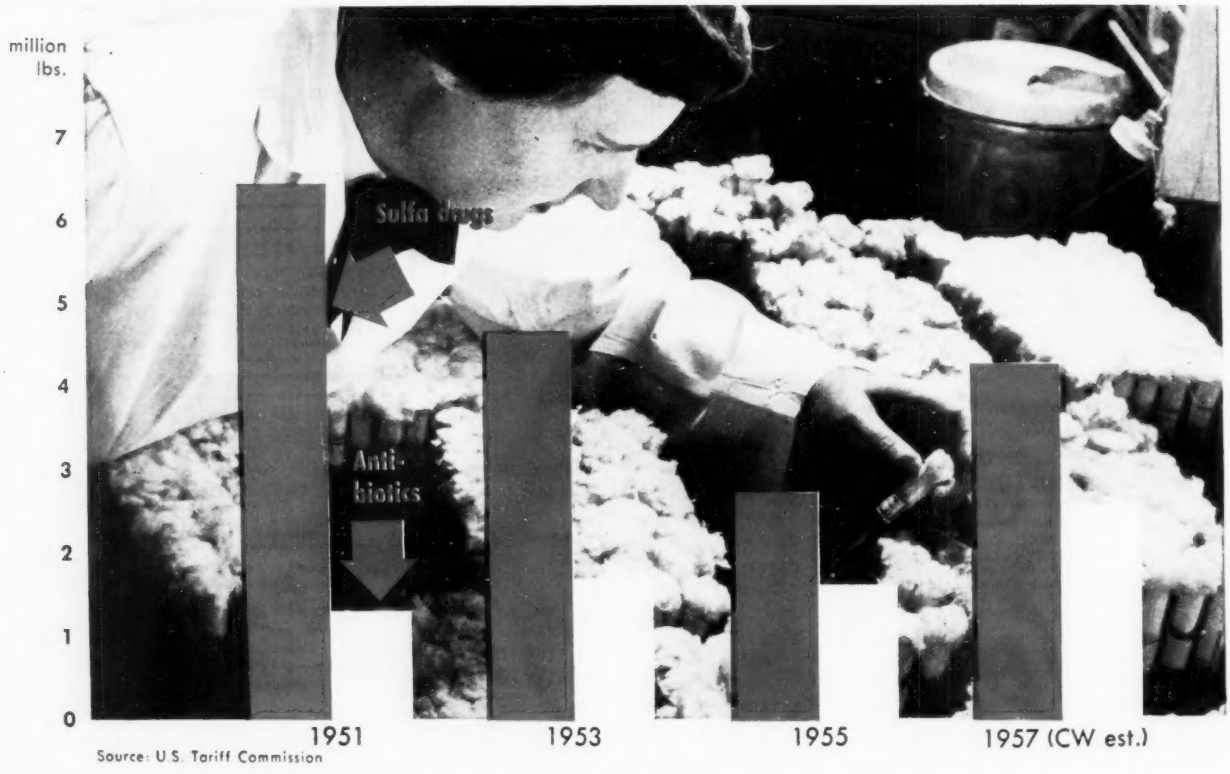
Mercury—Extra Pure Sextuple Distilled. Will not darken on standing in air. Reasonably priced. C.M.R. PO Box 6157 Phila. 15, Pa.

Wanted

Wanted: a 750 gallon stainless steel closed kettle, equipped with a slow speed agitator. Jacked should cover bottom of kettle. Reply to Rozilda Laboratories, Inc., 44-18 Purves St., L.I.C. 1, N.Y.

Wanted-Used #2DH, 10 H. P. Mikro Pulverizer, Stainlesas Steel. Contact Seair Forwarding Co., 35 S. William St., New York 4, N.Y.

Output of Sulfa Drugs and Antibiotics



Source: U.S. Tariff Commission

Sulfa Drugs: On the Upswing Again

Production of sulfa drugs continues its comeback after having been sent sprawling by stiff antibiotics competition. Estimated sulfa output last year: 4.2 million lbs., up 10% over '56's 3.8 million lbs.

In '55, production was at a low of 2.76 million lbs. That year, trade followers were predicting that sulfa drugs were on the way out because of inroads by antibiotics and lessening post-Korean War demands.

But two factors have brought resurging demand for sulfa drugs since '55:

- Use of triple sulfa preparations (three forms in one preparation) and other combinations.
- Use of sulfa drugs along with antibiotics in prescriptions.

Meanwhile, increasing exports have helped push antibiotics output to 2.50 million lbs. in '57, a 27% jump over '56's 1.97 million lbs. Shipments of antibiotics (other than penicillin and dihydrostreptomycin) in the first 10 months of '57 were 79% more than in the '56 period. Belgium-Luxemburg, Mexico, India were the main buyers. Reportedly, most of the antibiotics sent to Belgium-Luxemburg are reshipped to other countries.

from the first large-scale $NaBH_4$ *plant comes a basic ingredient for*

ZIP FUELS

Badger constructs new Metal Hydrides plant from site clearance to start-up. This new plant is among the first to produce $NaBH_4$, an important ingredient of "exotic fuels" for trans-sonic devices, on a large scale. From site clearance to initial start-up, Badger handled the complete equipment engineering and construction for the project.

While the characteristics of sodium borohydride make it fine for high performance fuels, its production creates real problems in equipment and plant design. How well did Badger meet and solve these problems?

Officials and engineers at Metal Hydrides have said they were impressed by the proven ability of Badger personnel and by the intelligent approach that was brought to MHI's problem. In addition, Badger was complimented for its willingness to undertake the project on a "crash" schedule. Metal Hydrides' judgment proved sound when Badger delivered the plant on schedule in spite of delays due to the steel strike.

Each year more and more leading firms with unusual and pioneering engineering projects choose Badger. The ability and experience that lead so many to the same choice can pay off on your projects, too. Why not inquire?

The Badger Key Man

FROM INITIAL NEGOTIATIONS TO "ON STREAM" YOU DEAL WITH A BADGER PRINCIPAL. *Badger Engineering Projects are group efforts headed by a Key Man. More than just a sales engineer, he is always a Badger principal — always the Key Man in the execution of the project.*

By channeling project liaison, coordination and administration through a widely experienced company principal, you find many policy level decisions can be made on the spot. Investigate what Key Man Policy can mean to the projects you are planning.

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Aerial view of Metal Hydrides' new Sodium Borohydride Plant at Danvers, Massachusetts, as it looked while under construction. The plant process involved the preparation of sodium borohydride using sodium and boric acid as raw materials.

From Heyden Newport

Chemist removing mold from rubber curing press with time and temperature controls in foreground. Inset shows detailed view of hydraulically operated rubber curing press located beyond the partition.

A New Laboratory To Help Solve Your Rubber Problems

TECHNICAL assistance plays an important part in Heyden Newport's service to the rubber industry. Nearing completion at Pensacola, Florida – this modern rubber service laboratory is designed to provide the utmost in promptness and efficiency by maintaining complete, modern research and technical service facilities. Experienced rubber chemists will be available to assist in solving customers' problems relating to rubber formulations.

The new laboratory is designed to develop better chemicals to improve rubber performance – add heat, wear and abrasion resistance to tires, footwear, and a variety of industrial rubber applications. It will supplement the expanded research program of Heyden Newport Chemical Corporation by producing new emulsifiers, tackifiers, antioxidants, accelerators, retarders, and specialties for both the polymerization and compounding of rubber and other elastomers.

Convenient distribution points make these and other Heyden Newport products quickly available to such industries as paper, paint, ink, rubber and adhesive. Sales and technical staffs are always at your service. Newport Industries Company, 342 Madison Avenue, New York 17, N. Y.

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